Chapter 12

How to Connect and Combine IA Processes

12.1 HIGHLIGHTS

In this chapter, we explore how the individual IA processes, the IA process types, and the approaches for addressing contemporary challenges presented in Chapters 3–11 might be connected and combined at both the regulatory and applied levels. We also address the contemporary challenge of matching process and context, identify the limits of synthesis, and suggest future action priorities.

- The analysis begins in Section 12.2 with three applied anecdotes concerned with the role of synthesis in IA practice. The first story describes an approach for bridging the gap between SEA and project EIA. The second story uses an example to illustrate the role of capacity building in establishing a foundation for integrated good IA practice. The third story describes how IA can serve both its traditional purposes, and provide a means of achieving broader institutional, social, and environmental ends.
- In Section 12.3 we define the problem, which is how to adapt, connect, and combine IA processes, IA types, and approaches for addressing contemporary challenges to suit the situation. The direction is frameworks and procedures for matching IA processes and contexts, for connecting IA types, and for connecting and integrating IA processes at the regulatory and applied levels, and in a manner that effectively addresses both recurrent problems and contemporary challenges.
- In Section 12.4 we explore how IA legislation, regulations, and guidelines could be reformed and refined to better address the regulatory deficiencies and opportunities described in Chapters 2–11.
- In Section 12.5 we address interconnections among the recurrent problems and the IA processes that seek to more effectively manage those problems.
- In Section 12.6 we identify links, overlaps, and middleground concepts between and among various IA types (SA, SEA, EIA, EcIA, SIA, and HIA).
- In Section 12.7 we address the contemporary challenge of matching process and context. We identify relevant IA process attributes, and describe ways of facilitating the fit between process and context.
- In Section 12.8 we address interconnections among contemporary challenges and ways of integrating responses to contemporary challenges into IA process design and management.
- In Section 12.9 we present examples of how composite IA processes could be formulated and applied.
- In Section 12.10 we address the limits of synthesis. We also identify priorities for future action.
- In Section 12.11 we provide an overview of the major insights and lessons derived from the analysis.

12.2 INSIGHTS FROM PRACTICE

12.2.1 SEA and EIA—Bridging the Gap

The Austrian transport infrastructure is relevant to the European Union as major European road and rail transit lines, as well as the waterway on the Danube River, cross the country. Therefore, the transport infrastructure network is regularly expanded not only for the national transport demand, but also for European transit. The capacity of existing transport lines is regularly increased and new transport lines are added. Despite the huge strategic importance of the transport network a legally binding intermodal national transport plan does not exist. Only a development strategy for the national transport infrastructure (in German: "Ausbauplan Bundesverkehrsinfrastruktur," BMVIT, 2012) is published by the Ministry of Transport, Innovation and Technology that explains the major road and railway projects for the coming years.

When the SEA directive of the European Union went into force in 2001, there was a chance that only the network of national roads and the waterways might have been affected by SEA (Weber and Stöglehner, 2001): because of the special regulations of Austrian transport planning and the screening conditions of the SEA directive. The scope of SEA in Austrian transport planning might, therefore, have been rather limited. Yet, the Austrian government decided to implement a so-called "strategic assessment- transport"

Impact Assessment: Practical Solutions to Recurrent Problems and Contemporary Challenges, Second Edition. David P. Lawrence.

(SA-T, 2005; in German: "Strategische Prüfung Verkehr"—SP-V) for all changes of the transport infrastructure network including railways, waterways, and national roads. This initiative can be seen as an attempt to introduce not only environmental assessment, but also a means of integrating the first steps toward sustainability assessment into transport planning.

If a change of the transport infrastructure network is planned a process according to the SEA directive has to be carried out. An environmental report has to be drafted, consultations with the public and environmental authorities and in defined cases neighbor states have to be held, the results have to be taken into account in the decision, information about the decision has to be provided, and monitoring has to be implemented. Additionally, the SA-T law introduces objectives that have to be addressed by the change of the national transport network: inter alia, sustainable transport of persons and goods, aiming at a high level of environmental protection, securing a high quality transport network, intermodal transport organization, and high cost–benefit relation. Furthermore, it is stated that in the environmental report the changes in the transport network and their expected benefits have to be reasoned, and that intermodal alternatives have to be included.

The SA-T has some conceptual pitfalls as it is organized similar to EIA: a proponent hands in an environmental report, which is then approved by the Ministry of Transport. As proponents are mainly state-owned companies that are responsible for highway, railroad, or waterway construction the issue of bias come into question. This causes the problem that when one asks a highway company to carry out an assessment of alternatives across transport modes, one will very likely get a road as a result, and not a railway. In this way, the state transfers the responsibility of intermodal, strategic transport planning on the national level to the infrastructure companies that have the purpose to build and maintain specific transport infrastructures. For this reason, one can, inter alia, be skeptical if reducing the transport demand or developing serious intermodal alternatives are options fairly enough discussed in such a planning culture.

So far, seven SA-Ts were completed, six for national roads and one for a railway project (BMVIT, n.y.). All SA-Ts had a wider scope than environmental concerns, for example, a substantiation of the respective transport lines and an intermodal assessment of the transport demands. The assessment of roads regularly comprises a cost–benefit analysis, an environmental assessment, and a sustainability appraisal as stated in a guidance for national road SA-Ts (BMVIT, 2006). All SA-Ts led to a result in favor of the proposed infrastructure expansion. Inter alia, for this reason, critics call SA-T ineffective (Mittendorfer, 2008) and claim a revisal of the SA-T regulation is needed.

It can be concluded that the SA-T idea has some advantages as it closes a gap in environmental decision making addressing the strategic meaning of transport infrastructure projects on the one hand, and introduces elements of sustainability assessment on the other hand. Yet, the conceptual pitfalls and the current methodological practice leave considerable room for quality enhancement. As the SA-T is rather close to EIA and legally binding intermodal strategic transport planning is still underdeveloped in Austria, additional improvements to the transport planning and assessment system should be further instituted.

In terms of potential broader implications, the bridging of SEA and project level EIA can clearly be problematic because of issues associated with the division of responsibility and the independence of those responsible for the preparation of IA documents. Examples of possible approaches for addressing such concerns can be identified on two levels: (1) the strategicness of the planning system and (2) the improvement of the SEA–EIA system. As demonstrated on the SA-T approach, elements of strategic planning like intermodal assessment of alternatives are introduced on a level closer to project implementation than transport infrastructure strategies. In doing so, certain gaps in environmental decision making addressing the demand—which is one of the most important strategic questions in SEA (Stoeglehner et al., 2010)—can be closed. Yet, this still does not lead to full-scale strategic infrastructure planning. In order to establish such a planning and assessment system, a legally binding intermodal national transport strategy/plan would have to be introduced that is also coordinated with urban and regional planning. In my opinion, such a plan would best address strategic questions like demand and most favorable means of transport. An environmental or sustainability assessment on such a scale would have the potential to become "really" strategic (according to the definition of Noble (2000a)).

In general, without such a strategic planning approach the existing system could still be enhanced, for example, by including (1) independent effectiveness reviews of system-level IA documents and processes; (2) the formal and independent peer review of such IA documents; (3) the preparation of the IA document for system-level improvements by an independent third party; (4) the creation of an informal joint body for the purpose of supervising the preparation of system-level EIA–SEA documents; (5) the creation of a permanent body to be responsible for the planning and assessment of system-level infrastructure improvements; (6) a combination of options 1–5. Parties in different jurisdictions struggling with how best to address the difficult middle ground between SEA and project-level EIA also could benefit from the sharing of insights and experiences.

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relevant to the social, cultural, environmental, and economic realities of the SADC region.

Below is a brief summary of these products.

- *A Guide to Opportunities for Public Participation in Environmental Assessment Processes in the Southern Africa Development Community*. This handbook contains a clear description of all the rights that communities and the public have to participation in environmental decision making as conferred by international, regional, and SADC region conventions, laws and policies related to environmental impact assessment and decision making. This document has approached the rights issue from "an opportunity to participate" perspective, and is formatted around several key questions for each SADC country.
- Generic Public Participation Terms of Reference for civil society engagement involved in a point EIA (e.g., mine site), linear EIA (e.g., pipeline), or a regional strategic environmental assessment. Also included in the document are guidelines and tips on how to develop Terms of Reference that ensure that all contracting parties achieve maximum satisfaction and results throughout the duration of the relationship for a particular project.
- A Situation Assessment that describes and analyses the status of public participation and EIA for all countries of the SADC region.
- Research into six case studies in the SADC region where environmental assessment and public participation were done with distinction. Time and time again, studies show that when civil society has a chance to contribute to development planning, the end result is a project or program that has more far reaching direct and indirect development benefits than were originally planned. This is the first time that six projects from the SADC region have gone through such detailed analysis.
- *A One-Stop Participation Guide: A Handbook of Public Participation in Environmental Assessment in Southern Africa*. The lessons learned from the six case studies were integrated into the handbook methodologies. The handbook is unique in that it offers tips and the process to follow for public participation from the perspective of the four key stakeholders who are part of any public participation process: regulators, industry, practitioners, and civil society.
- The handbook also contains a PP Best Practice Model, a PP Review Template that can be used during the review or planning of a PP program, and a series of template letters that civil society can use to ensure that their voices are heard and respected in a respective public participation process.
- Calabash has also developed an Electronic Library of Public Participation and Civil Society Engagement tools from around the world. The library has grouped materials from the SADC region, Africa, and International. Over 250 resources and manuals exist on the Calabash site.
- Also available is the 2005 Desktop calendar that devotes text for each month to the benefits of civil society engagement.
- A course on EIA and PP.
- The Calabash web site also has published newsletters, Chat Forum, Calabash Planning workshop proceedings and a Poverty Reduction Strategy Paper (PRSP) analysis tool to determine how well environment is being integrated into the PRSP process.
- Lastly Calabash has a wall poster in cooperation with the Centre for Public Participation, Durban.

Calabash respected the needs of the region and the existing PP capacity that could be built upon. Also, the tools and outputs coming from Calabash were designed to be practical and able to be applied directly to ongoing public participation projects in the region. Calabash was designed to be a capacity building node for PP in the region, and it did not waiver from that core objective. It also sought every opportunity to integrate the outputs and news of Calabash wherever possible through word of mouth, corridor conversations, television and print media, and other development interventions in the region. A project such as Calabash cannot have success unless it gets buy-in from local stakeholders, and the outputs match required needs. This was done, the result of which is a PP capacity building program that well reflects the status, and potential, for PP and EIA in the SADC region.

Calabash had a vision and objective to ensure that the voices of the poor were better reflected in the decision-making process central to EIA and public participation. Therefore, the case studies, the "right to participation" handbook, the procedural handbook, and the template PP Terms of reference handbook emphasized the critical requirement to ensure that the poor and marginalized are brought into the public participation process through such techniques as providing food, transportation, skills, money, use of appropriate language, community radio, and community theatre. These tools also ensured that communities' voices would actually be heard. To do this, Calabash developed practical template letters that communities and Community-Based Organizations could write to ensure their issues were respected by regulators and the proponent. These letters also included templates on how communities would like to be consulted and also letters of appeal if communities felt their rights were not being respected. This very much reflects a direct technique and approach in defining how a community or group of people wishes to participate. With respect to meeting the process needs of all participants, the Calabash program developed an EIA/PP procedural handbook that is unique in Africa. The roles and responsibilities for PP and EIA are not the same for all stakeholder groups in the process. Therefore, the handbook has been designed so that there are

12.2.2 Capacity Building—Building the Foundation for Integrated Good IA Practice

The World Bank is focusing much of its work on community-driven development (CDD) as a better tool for poverty reduction. There is now the realization that communities do have capacity that can be used, that communities are not homogeneous, and many local institutions and NGOs can be better used to assist in development efforts. Efficient CDD requires an enabling policy and legal environment, downward accountability, capacity building at the local level, community empowerment, sustainability, and social inclusion. Effective CDD means communities have control and can influence the decisions that directly affect them. At the core of CDD is environmental sustainability and capacity building. However, many communities in the Southern African Development Community lack the capacity, and opportunity, to participate in the public participation (PP) element of environmental impact assessment (EIA). The Southern African Institute for Environmental Assessment (SAIEA), through support provided by the World Bank and Canadian CIDA, undertook a 2-year project to develop a process to enhance participation in decision making in Southern Africa. Calabash was not designed to actually do public participation, but rather was structured so that regulators, private sector, practitioners, and civil society had the capacity, knowledge, and tools to better undertake respective public participation programs on individual projects and programs. How a respective government, with respect to decision making, engages civil society is one measure of how a government is reforming its governance and democratic reform processes. Environmental impact assessment is one window through which the public has the opportunity to engage a government in decision making. However, in southern Africa, there is insufficient public access to information and there are inadequate mechanisms for public participation in decision making. EIA has existed for 30 years. During its evolution, public involvement in the EIA process has become a key criterion that distinguishes EIA as a participatory decision support tool. Consequently, EIA is a suitable and appropriate platform from which to build participatory approaches for the southern African region. Governance in its simplest forms describes the relationship among institutions, processes, and ideas. It is about the exercise of power, accountability, and relationships in pursuit of an organization's mission or a nation's goals. In Africa, achievement of a country's goals are severely challenged due to such issues as resource degradation, HIV/AIDS, water scarcity, and conflict. Environmental assessment of projects and strategic environmental assessment (SEA) of policies, plans, and programs, are evolving rapidly to address wider sustainability objectives beyond biophysical concerns. The evolution of these planning tools is recognizing that the public has a significant role to play in the EIA or SEA process to assist a government to achieve its objectives, while at the same time advancing democratic reform and good governance practices. Many African countries have well-written EIA statutes that require the involvement of the public or civil society in the project decisions that affect them. To date, the application and success of public involvement in EA have been most variable due to lack of capacity, information, knowledge, and networks in many stakeholder groups. Regardless, EIA presents a very effective and practical tool for African governments to show to the international investment community and the African democratic review teams that democratic principles at the project/program level are being applied. EIA is one big "window" through which democratic reform can be realized by more participation. This project is but one step of many to assist the SADC region to move forward on democratic reform by using EIA as a catalyst for participatory decision making. Core to the success of the project were four preliminary activities. These were:

- The development of a 600-person Contact Group in the region who represent those involved in EIA and public participation (regulators, private sector, civil society, and practitioners). These people were to be the key "levers" of change for the 14 countries of the SADC region.
- The creation of a Project Advisory Team of 30 people from across the SADC region who advised Calabash on a regular basis on how the program should evolve to meet the needs of the region. These 30 people were drawn from the 600-person Contact List.
- The research and publication of a Situation Assessment on the status of EIA and PP in the SADC region. This document proved to be the foundation upon which the program would be built as it identified the strengths, weaknesses, opportunities, and threats to PP in the region.
- The development of a Communications Strategy that outlined how the outputs of the Calabash program were to be broadcast and made accessible to the SADC region and abroad.

The other key element of Calabash's success was based on the development of partnerships with institutions, agencies, and persons who were also working on public participation issues, but perhaps not from the EIA window, but through, for example, democratic reform, the democratic peer review process, United Nations multilateral agreements on the environment and natural resource management. These partnerships were not "formalized" but were purposely kept informal, light, and reactive so that Calabash and the other respective parties could work together in a mutually beneficial manner to get the most development and public participation "reach."

Calabash had to meet PP needs of the region in a practical and accessible way. All Calabash products have had input from a range of stakeholders who are actively involved in community engagement to ensure the tools are practical and

four key chapters on how PP and EIAs are to be done if one is either a: regulator, private sector proponent, civil society, or practitioner. This approach has been well received in the region. The handbook also ensures that novel and cultural appropriate techniques are used to ensure those affected participate. In this vein, community radio, use of local language, community theatre, and providing the capacity for communities to participate, are directly emphasized. Many communities in the SADC region are barely surviving. If participation is to be ensured, then one must use techniques that are quite different for participation of wealthy and educated communities.

Calabash also ensures that all products were geared as much as possible to community needs. The "rights to participation handbook" is an example of this. It is quite true that citizens of most countries do not know their "rights" whether they are educated, poor, or wealthy. This is especially true for poorer communities who have lived under the yoke of poverty and possible colonial oppression. The "rights" handbook therefore provides CBOs and communities with a simple yet clear identification of the rights they have to participate in the EIA process that might be affecting them. Once they can articulate their rights to regulators, the regulators develop more respect and patience with the communities. In this way, more of an equal footing is achieved. And once the rights are known, Calabash then provides the information, knowledge, and skills on how to participate in a meaningful way. With respect to how communities' involvement affected a decision, Calabash tools, in particular the training course and the procedural handbook detail how postdecision follow-up must still be part of the PP process. In fact, Calabash emphasizes that community involvement and participation must parallel the project for its entire life. Again, Calabash tools are designed to instruct the regulator, practitioner or private sector on how the communities and local people are to be kept informed and involved during the whole life cycle of the project through culturally, socially, and economically appropriate methods.

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12.2.3 The Biogas Support Program in Nepal—Impact Assessment as an End and a Means

The Government of Nepal and the Government of the Netherlands worked together to implement the Biogas Support Program (BSP) in Nepal during the period 1992–2010. The Ministry of Science and Technology (MOSTE) authorized the implementation of BSP, and until 2003 the Netherlands development organisation (SNV) was responsible for the implementation of the program.

The objective of BSP is to promote the wide-scale use of biogas through the establishment of small-scale biogas plants at the household level. The majority of those plants are fed by the dung of two to four cows. The latrine can be attached to the plant, as well. Such a plant produces sufficient biogas for cooking for an average household of six persons and one gas lamp. Biogas is used as a substitute for fuel wood (4 tonnes per year per plant), agricultural residues, animal dung, and fossil fuels (kerosene 32 l per year per plant). On average, a plant produces 5 tonnes of organic fertilizer annually (slurry) that can replace chemical fertilizer. In addition, indoor air pollution-related health problems decrease and time saving for fuel wood collection is about 1000 h per household per year.

The BSP was undertaken in four phases:

- Phases I–III: 1992–2003; 91,200 plants
- Phase IV: 2003–2010; 120,000 plants
- Total number 231,200 plants (about 20% of the national potential)

MOSTE and SNV prepared an EIA to achieve the following objectives:

a. BSP wanted an independent evaluation of the impacts of the BSP that they considered very positive. In addition, they wanted to further improve the performance of the program.
b. BSP wanted to secure funding from the involved donors for the fourth phase that was planned to start in the summer of 2003.
c. An EIA could help secure new source of funding through the Clean Development Mechanism (CDM).

The independent Netherlands Commission for Environmental Assessment (NCEA) was requested to draft the terms of reference for the EIA study, and to review the final study.

According to the interviews and desk review the EIA has had a significant positive influence.[1] The positive effects of the EIA result directly from the NCEAs involvement. The following was concluded regarding the extent to which the three EIA objectives were achieved (as interpreted by the author on a four-point scale of influence: irrelevant—little—medium—large).

Objective (a): large influence—BSP program impacts and improvement of performance

The BSP annual progress report 2010, not only considered 2010 but also provided an overview of the results achieved during phase IV (2003–2010). In this report (p. 26), the following is stated about the EIA:

> *"The results of the EIA study then served as a basis for providing recommendations for the fourth phase of BSP.*

[1] Three key resource persons were interviewed in December 2010 in Nepal, and a desk review was made of available documents.

And . . . The EIA carried out with extensive household survey was considered helpful to more clearly understand and define the positive as well as the potentially negative impacts of biogas technology in Nepal. This study is useful with respect to clarifying interrelations between thematic fields, spelling out underlying causes of the impacts, offering an opportunity of balancing and prioritizing of the impacts and contributing an opportunity of a financial – economic evaluation of the impacts."

In the advisory report of the NCEA, the following new or important issues were recommended to be studied in the EIA:

- Potential direct effects: latrine construction, slurry for agricultural purposes, and pathogens in slurry; mosquito problem; biogas/methane leakage; water availability and consumption.
- Potential indirect effects: forest degradation; reduction in GHG; reduction of smoke-related injuries or diseases and translating the effects toward national level.

Latrine construction: the positive effects of combining latrine construction with a biogas plant have been recognized, and promotion activities resulted in a considerable growth of the percentage of latrines connected currently (about 69% as compared with about 50% in 2000).

Pathogens in slurry: pathogens originating from attached latrines may be harmful to public health. A study showed that this, now applied, design change is cost-effective. The combination of the design change and training in the safer handling of the slurry significantly reduces the risks of pathogens and, in turn, diseases.

Use of bioslurry: another benefit has been the increased use and better management of slurry as compost for agricultural production and as a substitute for chemical fertilizer.

Mosquito problem: the observed increase of mosquito problems is the result of a combination of (partly biogas plant-related) factors such as less smoke in house, too much water in the feeder, and thin slurry when latrines are attached. Adaptation of the plant design, together with awareness training, can and has tackled this problem.

Methane—biogas leakage: measurements showed that, on average, about 9.5% of the methane is leaking from the plant. Measures have been taken to reduce this emission.

Water availability and consumption: connection of the latrine helps to reduce the relatively large amount of water that needs to be feed into the plant—a time consuming task in remote and water scarce areas. In addition, rain water harvesting multiple use systems have been developed, which serve other purposes such as drinking water and drip irrigation.

Objective (b): small influence—secure funding for the fourth phase, 2003–2010

The evaluation confirmed that the main reason for not finalizing the EIA report was the lack of secure funding from the main donors. BSP management also was already satisfied with the output of the EIA study (objective a); after approval of the fourth phase, the BSP management shifted their priorities and finalizing the EIA was considered a time consuming exercise. During the process contact was made with the German donor but they stated that they had their own evaluation method.

Objective (c): large influence—funding through CDM

BSP has used the draft EIA as a starting document to solicit CDM funding. According to the people interviewed, BSP was the first project asking for this type of funding. The draft EIA has played a crucial role in obtaining approval for two biogas CDM projects, with about 20 plants being registered in December 2005. Approval of the entire BSP program, under the Certified Emission Reductions, required an improved monitoring system. The program was approved in 2010.

Conclusions. As a result of the EIA, the performance of the biogas plants has improved considerably during the fourth phase. There have been more positive impacts and less negative impacts for each newly constructed plant. These improvements are mainly the result of a learning process by the BSP staff—a process facilitated and supported by EIA through both agenda setting and supplementary research on some issues.

At this time, 1.300 million inhabitants benefit directly from biogas plants in Nepal. This is about 20% of the potential expected to benefit in the coming decades.

The BSP is considered a success story from the perspective of renewable energy in rural areas in developing countries. It has won two global awards in 2005 and 2009 in the field of renewable energy, and it is used as a model for the setup of comparable programs in other countries such as Vietnam, India and, recently, in West-Africa.

Sources: BSP (2002, 2010), Bajgan et al. (2005).

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12.3 DEFINING THE PROBLEM AND DECIDING ON A DIRECTION

The three stories address the role of synthesis in different ways. In the first story, an example middle-ground approach to bridging the gap between SEA and project-level EIA is described. In the second story, a major IA capacity building initiative is described. The story illustrates that effective IA capacity building provides a mechanism for addressing multiple recurrent problems and contemporary challenges. In the third story, the role of EIA was broadened beyond that of a decision-making aid to that of a vehicle for helping to realize broaden institution building, social learning, and secondary environmental enhancement purposes.

This book identifies (in Chapter 2) numerous choices for managing conventional IA processes. It then presents (in

Chapters 3–11) nine different IA processes, each responding to a different recurrent problems often encountered in IA practice. Variations in responses to the recurrent problems among six different IA types are highlighted. Approaches for addressing 10 different contemporary challenges also are addressed (the contemporary challenge of matching process and context is addressed in this chapter). Chapters 2–11 provide an array of potentially valuable IA process management tools. But, they do not address overall process management regulatory roles, how to deal with overlaps among IA process types, how to deal with interconnections among IA types, when to apply the tools (i.e., matching process to context), and how to respond when there are multiple problems and contemporary challenges (i.e., formulating composite IA processes).

More specifically, it is necessary to consider (1) how far to go, at the regulatory level, in directing and guiding IA process management (given the range of processes and contexts); (2) how to address interconnections among IA processes that seek to manage recurrent problems; (3) how to address interconnections among IA types; (4) how to match process and contextual characteristics; (5) how to address interconnections among approaches for addressing contemporary challenges; (6) how to design and manage composite IA processes; and (5) how to cope with the limits of synthesis and to establish priorities.

12.4 COMPOSITE REGULATORY FRAMEWORKS

IA regulatory practitioners are engaged in a delicate "balancing act." They define, through legislation and regulations, minimum levels of adequate IA practice. IA legislation and regulations also contain broad goals and principles to provide a rationale for requirements and a direction for current and future regulatory and applied practice. Both minimum standards and ideal characteristics change and evolve. IA guidelines and applied research help ensure that requirements are achieved. Because of their greater flexibility, they also contribute to practice levels that often exceed the minimum, thereby narrowing the gap between the adequate and the ideal. IA requirements and guidelines need to be neither too general (which could result in a low and inconsistent level of practice) nor too precise (which could unduly restrict and limit adaptation and innovation). IA requirements operate within the context of a complex set of related environmental requirements, policies, and objectives, a rapidly evolving field of theory and practice, permeable boundaries with a host of related field of theory and practice, and a multiplicity of ecological, social, economic, cultural, and political conditions, events, patterns, trends, and uncertainties.

How then should the IA process be addressed as part of this "balancing act" at the regulatory level? The IA process should not be ignored, by concentrating exclusively on document content and on administrative procedures. The IA process provides the framework for conducting all IA activities and for applying all IA methods. A poorly designed and executed IA process (a circumstance that occurs all too frequently in practice) can readily undermine individual IA activities and methods. IA documents should be outputs from the IA process rather than ends in themselves.

Chapter 2 demonstrates that a single standardized IA process is a dangerous myth. This does not preclude identifying core IA process attributes, if considerable discretion is left to IA process participants in choosing among process management choices and if adequate provision is made for contextual adjustments. Guidelines could provide participants with a sense of the range of potentially appropriate IA process choices. Chapter 2 offers an initial sense of core IA process attributes that could be incorporated into IA requirements and guidelines. It provides an overview of generic regulatory choices for directing, bounding, and guiding SEA and project-level EIA processes, and processes for other IA types (EcIA, SIA, HIA, and SA). It describes "good regulatory EIA practice" for undertaking screening (proponent-driven, action-driven, environment-driven, combinations of proponent, environment- and action-driven, significance determination), for conducting individual EIA activities (general, scoping, proposal characteristics, baseline analysis, proposal characteristics, impact analysis and synthesis, alternatives analysis, mitigation and enhancement, methods, documents, management, auditing, participation, review, and decision making), and for addressing interrelationships (among EIA activities, with international EIA activities, among government levels, with related governmental requirements and action, with the IA knowledge base). Chapter 2 also provides an overview of available EIA process management choices, of possible SEA, SA, EcIA, SIA, and HIA regulatory and process management choices, and of potential SEA good-practice guidance approaches. IA requirements could specify the core IA process elements that must be addressed in IA documents. IA guidelines could elaborate on "good-practice" IA process management and could provide examples of available management choices.

Regulatory measures to address the IA process, as identified in Chapter 2, although necessary, are unlikely to fully respond to the recurrent problems, to the contemporary challenges, to the differences among IA types, and to the need to adapt to and influence context. Chapters 3–11 describe in detail the many measures introduced by the four jurisdictions to avoid and minimize the recurrent problems. Directions for future regulatory reform also are identified. Chapters 3–12 describe potential regulatory level approaches for addressing the various contemporary challenges. Numerous good practices and potential pitfalls are identified. Each of Chapters 3–11 address how the various IA types (SA, SEA, EIA, EcIA, SIA, HIA, SIA) have addressed the recurrent problems at the regulatory and applied levels. Several relevant practice-based anecdotes are also presented.

IA requirements and guidelines should be broad enough to allow for a diversity of approaches for ameliorating the

shortcomings and for addressing the challenges, while still ensuring consistency with the purpose and objectives of IA requirements and facilitating an appropriate match between process and context. Approaches applied in other jurisdictions should not be borrowed uncritically. Contextual factors vary greatly among jurisdictions. It is foolhardy to apply a measure simply because it has been applied elsewhere, especially if the effectiveness of the measure has not been assessed. Considerable benefits, however, are likely to accrue from jurisdictions sharing experiences and coordinating applied research efforts.

Regulators should proceed cautiously in controlling and guiding how IA process types, IA types, and approaches for addressing recurrent problems and contemporary challenges are linked and combined. Several examples of composite processes are described briefly later in this chapter. IA requirements and guidelines can help ameliorate the recurrent problems and address the contemporary challenges with individual measures and by recognizing that it often is necessary to "juggle" multiple, sometimes conflicting, values, and approaches. Care must be taken regarding such matters as the appropriate mix of process and substance (arguably greater emphasis needs to be placed on substance and links to related substantive environmental requirements need to be more effective), vertical coordination initiatives (e.g., multijurisdictional IA coordination, harmonization and integration, IA tiering, connections to international environmental and IA treaties and initiatives, connections to local IA and environmental requirements, planning and management), horizontal coordination initiatives (e.g., links to decision making, connections to other measures, requirements seeking to minimize negative and enhance positive environmental effects, administrative and institutional interactions), links to related fields of theory and practice, interconnections among measures for addressing transcending environmental issues (e.g., climate change), and efforts to balance the need for greater convergence among IA requirements and the enhanced application of IA good practices with the importance of allowing for, for example, cultural, political, environmental, institutional, and administrative contextual differences.

Over time it could be possible to identify, from applied research, which approach combinations are best suited to which categories of situations. These patterns can be noted in IA guidelines, while acknowledging the need to make IA type and contextual adjustments. It is unlikely that the evidence from effectiveness reviews (appreciating that effectiveness also is IA type and context-dependent) will be sufficiently definitive to enshrine the circumstances under which particular IA process combinations must and must not be applied to prevent and ameliorate various mixes of recurrent problems and contemporary challenges. It may be possible for individual agencies to establish, as a policy, based on their experiences in dealing with the recurrent problems, the contemporary challenges and various mixes of IA types, the IA process approaches that they will generally take for different classes of situations. Even so, each IA process and context is unique, fluid and uncertain, and will require initial and ongoing, collaboratively generated, adjustments to match the unique and evolving circumstances surrounding each IA process.

12.5 RECURRENT PROBLEMS

The nine IA process types are based on a desire to prevent and minimize specific recurrent problems. Matching process and context, therefore, entails applying an influential IA process when enhanced political influence is a priority, a rigorous IA process when scientific rigor is a priority, a rational IA process when rationality is a priority, and so on. More specifically:

- An *influential* IA process is preferred when the information and analysis generated by more conventional IA requirements and processes are likely to have little, if any, influence over decision makers or prevailing decision-making processes and practices. A more proactive effort is needed to understand, connect to, influence, reform, and ultimately transcend existing administrative, institutional, and political structures and patterns of interaction. Stakeholders, who currently exert political influence within the administrative–political system, need to "buy in" to and actively participate in the process and its outcomes. The range and role of stakeholders participating in and influencing IA-related decisions needs to broadened and redefined in a manner that ensures IA-related decisions are made within rather than external to the IA process. The basis for such decisions needs to be explicit and to flow from the IA process.
- A *rigorous* IA process is more appropriate in situations where the environment is amenable to scientific analysis; where causal webs of direct and indirect effects can be identified, measured, predicted and monitored; where scientific knowledge and methods are likely to make a significant contribution to decision making; and where there are adequate resources and stakeholder support for scientific analyses.
- A *rational* IA process is well suited to stable systems with well-defined proposals, options, and effects. The systematic screening and comparison of multiple options is a priority. It should be possible to aggregate preferences and effects, either quantitatively or qualitatively. This suggests an open and nonoppressive environment where stakeholders are willing to engage, to communicate, and to be "reasonable." Positions, values, and interests are not polarized. A high premium is placed on scientific and technical knowledge and evidence.
- A *substantive* IA process is well adapted for comprehensive medium- to long-term efforts to advance

environmental or sustainability objectives. Such processes may function more effectively at a strategic (policy, plan, program) level, where the scale of analysis is regional or greater. Major project-level EIAs can apply this process but are even more effective if undertaken within the context of an array of larger scale environmental management frameworks and indicator systems.

- A *practical* IA process is well matched to short-term, politicized environments, characterized by limited resources, a limited ability to control the environment, and high levels of uncertainty beyond the immediate future. Stakeholders are generally resistant to change but are prepared to bargain. Changes generally take the form of mutually beneficial, incremental adjustments from the status quo. A heavy emphasis is placed on satisfying decision-making requirements, on efficiently working within available resources, and on ensuring implementation.
- A *democratic* IA process tends to work especially well when clearly identifiable stakeholders wish to "control their own destinies." Proponents must be willing and able to delegate, for selective decisions, their decision-making authority. Local stakeholders must be willing and able to select, maintain contact with, and support representatives. Stakeholder representatives must be prepared for and capable of participating in a time-consuming, demanding, complex, and sometimes controversial planning and decision-making process with other parties. It is essential that there be sufficient time and resources to support the process.
- A *collaborative* IA process seems best suited to situations where major stakeholders can work together collaboratively to achieve mutually agreed upon ends by mutually agreed upon means. It should be possible for stakeholders to select and support representatives. Stakeholder representatives should be willing and able to participate in a time-consuming and often protracted joint planning endeavor. They should be prepared to maintain close contact with their constituents and to accept that other parties retain final decision-making authority. There should be sufficient resources to support the process and sufficient time for the process to proceed "at its own pace."
- An *ethical* IA process is especially appropriate when issues of fairness, equity, and social and/or environmental justice predominate. There should be both procedural and distributional ethical concerns. All major parties should desire that ethical rights and duties be identified and formalized. There should be a willingness to identify and reconcile conflicting ethical procedural and distributional principles, rules, rights, and duties. All parties should be comfortable with ethical concerns taking a lead role in each IA activity.
- An *adaptive* IA process is more effective for complex problems in turbulent, unstable, and complex environments. Concerns with risk, uncertainty and human and ecological health should predominate. There should be a general acceptance of the need to anticipate and to manage uncertainties rapidly and effectively. There should be a willingness to recognize knowledge limits, to ensure that uncertainty-related concerns assume a lead decision-making role and to commit to an iterative, learning, and adaptive IA process and organizational structure.

Several additional refinements are necessary to reflect the complexities of both the processes and the context.

1. The IA processes, described in Chapters 3–11, include numerous subsets and variations. Part of matching process to context necessitates selecting the process variations that best match the context.
2. Part of adapting the process to the context is the determination of the appropriate extent of horizontal integration among IA types and vertical integration among IA levels.
3. Matching process and context also entails integrating and addressing, to the extent practical, the contemporary challenges.
4. The boundaries between core process elements and IA process types are "fuzzy" and permeable. Iterative adjustments to both the process and the core elements are necessary to optimize responses to recurrent problems.
5. Each IA process has strengths and limitations. It is necessary to ameliorate the relevant limitations and to reinforce the relevant strengths. This can entail drawing upon other IA process types, concepts, and methods, as appropriate.
6. More than one recurrent problem and contemporary challenge is likely in any given situation. This means that aspects of more than one IA process will need to be incorporated into most overall IA processes.
7. IA process types and IA types often overlap and sometimes conflict. Interactions among process types will need to be considered. There should be minimal duplication (unless deliberate) and individual process elements should be mutually supportive or counterbalancing.
8. Matching process to context is not a one-step procedure. There should be an initial matching of process to context type. Proposal- and environment-specific adjustments should then be made. Ongoing adjustments will be necessary as the process and context coevolve.

IA process types can be connected in many ways, as highlighted in Table 12.1. One process could provide inputs

Table 12.1 Examples of Recurrent Problem Process Interconnections, Overlaps, and Middle-Ground Concepts

Influential and Rigorous	Influential and Rational	Influential and Substantive	Influential and Practical
Sound science can inform and influence decision making Decision makers can bound scientific analysis and determine scientific priorities Integration of science and politics Environmental advocacy	Rational analysis can inform and influence decision making Decision makers can bound and temper rational analysis Rational analysis taking into account political realities Critical theory	IA can influence decision makers toward substantive outcomes Decision makers can facilitate or inhibit the realization of substantive outcomes Social/ecological action SA encompasses action and substance	Practical IA approaches tend to have greater decision-making influence SA encompasses influential and practical
Influential and Democratic	**Influential and Collaborative**	**Influential and Ethical**	**Influential and Adaptive**
More democratic IA practice can open up and influence decision making Community-controlled IA Shared and delegated decision making in IA practice enhances the decision-making role of interested and affected parties Middle ground: community empowerment, IA as a social struggle, conflict IA	A collaborative IA approach enhances the potential for "buy in" by decision makers Collaborative IA processes do not always lead to greater decision-making influence Middle ground: political–dialogical IA approaches, pluralist political IA model	Appeals to ethical principles and standards tend to have a broad public appeal and the potential for greater decision-making influence SA encompasses political action and procedural and substantive ethical principles	Decision-making processes tend to involve a high degree of uncertainty and change rapidly; adaptive IA processes share such characteristics and enhance the potential for greater decision-making influence SA encompasses adaption/precaution and political action
Rigorous and Rational	**Rigorous and Substantive**	**Rigorous and Practical**	**Rigorous and Democratic**
Complementary methods Reliance on specialist advisors Emphasis on comprehensiveness, explicitness, consistency, and transparency Both stress analysis more than synthesis and seek systematic, traceable process Middle ground: scientific rationality	New or holistic science Emphasis on experimentation and modeling Scientific knowledge informs substantive process Substantive goals guide applied science Middle ground: holistic science, AEAM, ecological theory, positivistic social science, interpretative social science	Both grounded in reality and inductive (i.e., experience-based) Balance of rigor and relevance and of explanation and prescription Applied science informs decision making; practicalities bound scientific analysis Middle ground: phenomenological sociology, interpretative social science, pragmatism, empiricism	Scientific analyses and knowledge inform democratic processes Both explicit and traceable Scientific interpretations informed and facilitated Middle ground: civic, lay, and holistic science, critical social science

Rigorous and Collaborative	Rigorous and Ethical	Rigorous and Adaptive	Rational and Substantive
Scientific analyses inform collaborative processes Scientific interpretations informed and facilitated Scientific analysis and collaborative synthesis complementary Middle ground: AEAM, civic science, peer review, scientific community, SIA (collaborative)	Both seek to avoid bias Ethical standards for scientific research Complementary interpretations Middle ground: research ethics, holistic science	Both explicitly address risks and uncertainties and stress importance of monitoring Adaptation recognizes scientific limits; precautionary principle combines scientific limits with severe harm potential Shared interest in complex and chaotic systems Shared methods (e.g., modeling) Middle ground: AEAM, new science, social learning, uncertainty analysis, uncertainty principle, postnormal science	Rational methods inform substantive processes Substantive framework for rational methods Rational analysis and substantive synthesis complementary Middle ground: ecological and social rationality, rational systems, substantive/purposive rationality, ecological impact assessment, SIA (technical), sustainability assessment
Rational and Practical	**Rational and Democratic**	**Rational and Collaborative**	**Rational and Ethical**
Rationality informed by experience Practical bounds to rationality Middle ground: mixed scanning, strategic planning, purposive incrementalism, bounded rationality, effective planning, practical rationality, legal rationality, knowledge and reflection in action, prescriptive pragmatism	Rational analyses inform democratic processes Democratic offsets autocratic tendencies of rational methods; basis for interpretations and conclusions Middle ground: political rationality, advocacy planning, critical, social, political, structural, and reform rationalism	Rational analyses inform collaborative processes Rational argumentation in collaboration Collaborative inputs to rational Middle ground: communicative rationality, rational argumentation, procedural rationality, rational discourse, communicative planning, joint fact-finding, collaborative planning	Ethical conscience to rationality Rational analysis of distributional consequences Rational testing of ethical assumptions and assertions Ethical goals and principles to guide rational process Middle ground: professional ethics, value or normative rationality, equity or progressive planning
Rational and Adaptive	**Substantive and Practical**	**Substantive and Democratic**	**Substantive and Collaborative**
Integration of risk and uncertainty into rational analysis (e.g., risk assessment) Uncertainties about rational processes Middle ground: strategic choice, strategic planning and management, risk assessment and management	Both real, collective, and experience-based Short-term steps toward long-term needs Practical bounds on substantive aspirations Middle ground: purposive incrementalism, environmental management, integrated environmental, and resource management Shared methods (e.g., rapid rural appraisal)	Substantive analyses inform democratic processes Substance guides and frames procedures Both stress value of local knowledge Middle ground: co-management, bioregionalism, environmental and social movements and advocacy, traditional knowledge, political SIA, deep ecology, ecological politics, eco-feminism	Substantive analyses inform collaborative processes Substance guides and frames procedural Both stress dialogue, local knowledge, and consensus building Both elements of sustainability Shared methods (e.g., scenario writing, storytelling) Middle ground: co-management, shared vision planning

(continued)

Table 12.1 (*Continued*)

Substantive and Ethical	Substantive and Adaptive	Practical and Democratic	Practical and Collaborative
Both stress procedural equity Both concerned with intergenerational equity and needs of disadvantaged Distributional equity conducive to sustainability Middle ground: social and environmental justice, traditional knowledge, ecofeminism, teleological or consequentialist ethics, distributional or outcome equity or fairness, environmental ethics, sustainability ethics, normative ethics, human rights, and gender IA	Both seek to avoid crises and recognize need for adaptive processes and organizations Substantive uncertainties Ecological, social, and health all part of sustainability Middle ground: AEAM, ecosystem approach, social learning, latent time bombs, human health and ecological risk assessment, disaster and hazard analysis Shared methods (e.g., modeling, visioning, life-cycle analysis)	Both are procedural, assume conflicting interests, are overtly political and emphasize dialogue, bargaining, and experience-based knowledge Practical bounds to democratic processes Democratic principles to guide and limit practical processes Middle ground: critical pragmatism, capacity building, participant and intervener funding	Both are procedural and involve bargaining and dialogue Practical bounds to collaborative processes Collaborative principles to guide and limit practical processes Middle ground: dialogical incrementalism, communicative action, practical communications, practical deliberative learning Shared methods (e.g., participatory rural appraisal)
Practical and Ethical	**Practical and Adaptive**	**Democratic and Collaborative**	**Democratic and Ethical**
Ethics a conscience for practical processes Practicality ensures that ethical standards and decision rules can be implemented Middle ground: critical pragmatism, purposive incrementalism, applied or practical ethics	Both recognize major uncertainties and control limits, stress flexibility and hedge away from disasters Effectiveness reviews to anticipate and adapt to uncertainties Practical bounds to adaptation Middle ground: practical, deliberative learning, real problems, ingenuity gaps	Both procedural and participatory Both value local and traditional knowledge and involve consultation, communications, mutual education, negotiations, and collaboration Collaboration as a means for delegation Middle ground: critical dialogue, coalition building and networking, active mediation, co-management, constructive engagement	Procedural equity facilitates democratic processes Both concerned with rectifying power inequities Ethical analyses inform democratic processes Ethical analysis informed by democratic perspectives Middle ground: communitarian principles, traditional knowledge, community development and empowerment, critical, egalitarian, and feminist ethics
Democratic and Adaptive	**Collaborative and Ethical**	**Collaborative and Adaptive**	**Ethical and Adaptive**
Both iterative and interactive Risk and uncertainty analyses inform democratic processes Local and traditional knowledge consistent with a learning process Uncertainties about procedures Middle ground: critical and transformative learning, critical IA education, traditional ecological and indigenous knowledge	Procedural equity facilitates collaboration Ethical analyses inform collaboration Open collaborative process consistent with multiple ethical perspectives Negotiations about procedural and distributional rights and duties Middle ground: communicative or discourse ethics, procedural justice, communitarian ethics, participatory poverty assessment	Both iterative, interactive and stress mutual education Risk and uncertainty analyses inform collaborative processes Collaboration conducive to addressing risk and uncertainty perceptions, evaluation and management Uncertainties about collaborative procedures and outcomes Middle ground: collaborative learning, linguistic imprecision and confusion, risk communications, perceived risk	Uncertainties about values and ethical interpretations Ethical perspectives inform adaptive processes Ethical processes can be informed by risk and uncertainty analyses Middle ground: precautionary principle, risk assessment, professional standards, human and ecological health standards

to or derive outputs from another process. Both processes could provide elements that fit within a larger framework (e.g., sustainability). Combining two processes can offset the negatives or reinforce the positives associated with individual processes. Where two processes are combined, areas of duplication can be eliminated (to facilitate efficiency) or retained (to provide multiple perspectives). Processes can be applied simultaneously (separately, partially integrated, or fully integrated) or sequentially (perhaps applying to different IA activities).

Complementary process subsets, variations, methods, procedures, concepts, frameworks, and institutional arrangements can be partially or completely integrated. Middleground concepts provide an opportunity to build outward from the overlaps to take in appropriate IA process-type elements. Conflicts can sometimes be reduced through role definition and by applying potentially conflicting process elements to different IA activities. Or it may be helpful to retain conflicting perspectives in a "dramatic tension," consistent, for example, with societal divisions.

Process integration can involve tracing how each process evolved; identifying the needs met by the processes individually and collectively; determining the advantages and disadvantages of partial or complete integration; focusing on major process characteristics, similarities, differences, and interactions; identifying potential forms of synthesis; strengthening mutually complementary relationships; offsetting individual and mutual weaknesses; and retaining diversity where supportive of individual or joint process needs (Boothroyd, 1995; Nooteboom and Wieringa, 1999; Yiftachel, 1989). The end result could be separated or partially or completely integrated composite IA processes.

A composite IA process for addressing two or more recurrent problems could be formulated in any one of many ways. Elements from other IA process types could then be selectively added if they are mutually supportive and appropriate to the situation. This approach, although attractive in its simplicity, will likely result in only modest improvements to current IA "good practice." It is not as if current good practice does not address the recurrent problems. But the frequency and intensity with which the problems continue to be referenced suggest that more fundamental IA process management reforms are required.

Another, relatively simple approach can take place when the major issues are consistent with the conditions most suited to one of the nine IA process types. If, for example, the issues are largely ethical, then the point of departure would be an ethical IA process. The ethical process would be supplemented by core process choices (as described in Chapter 2) and other IA process elements, as warranted and appropriate. The IA process would focus on identifying and managing ethical issues and trade-offs. The same core—supplemental pattern would be followed if the issues primarily revolved around risk and uncertainty management, the rational evaluation of available choices, contributions to substantive environmental objectives, the practical resolution of approval and implementation-related issues, and so on. The situations where issues are so highly focused are likely to be rare. A variation of this approach would be to undertake two or more processes simultaneously or successively to provide varying perspectives at each decision.

A more realistic combination would be to build the process around clearly complementary (e.g., rational and scientific or collaborative and democratic) or counterbalancing (e.g., substantive and practical or rational and adaptive) IA process types. Other IA process types would assume a support role. Figure 12.1 portrays a composite IA process with a collaborative–democratic-influential core. Some IA decisions would be delegated. Some would be shared. Proponents and regulators would retain final decision-making authority for the remaining decisions, although there would be extensive consultation. This type of composite process is best suited to situations where issues are highly clustered. There should be broad agreement concerning issue clusters and the rationale for distinguishing between core and support roles.

A more complex and perhaps more realistic composite IA process is illustrated in Figure 12.2. The process begins from core IA process elements. The procedural elements are structured around a combination of collaborative, influential, and democratic decision making. Practical perspectives, strategies, and constraints are counterbalanced against substantive visions, goals, and indicators. The process is supported and informed by rational analyses; scientific analyses; adaptive, risk, and uncertainty perspectives and analyses; and ethical perspectives, principles, and analyses. It is structured within public participation, ethical, risk and uncertainty, and environment and sustainability frameworks. It is adapted to an array of contexts. It draws upon a variety of tools, fully involves all interested and affected participants, and produces both direct (e.g., documents, conclusions) and indirect (e.g., environmental quality changes, institutional changes, mutual education, contributions to the state of IA practice) products.

Another approach, illustrated in Figure 12.3, structures the process around temporal and spatial distinctions. Practical considerations predominate in the short term. The focus during this period is at the micro level (i.e., incremental adjustments from current practices). Rigorous, rational, adaptive, ethical, and substantive perspectives, methods, and analyses all contribute to the analysis, but are filtered through a practical perspective. Both micro and macro analyses occur in the medium term. Rigorous, rational, adaptive, and ethical IA processes all directly contribute to medium-term analyses. Practical and substantive IA processes make indirect contributions (i.e., filtered through the directly contributing approaches) during the medium term. Substantive methods, insights and ideals take the lead in the long term—macro analysis. Ethical and adaptive perspectives, methods and analyses assume a support role. The practical, rigorous, and rational IA processes make a

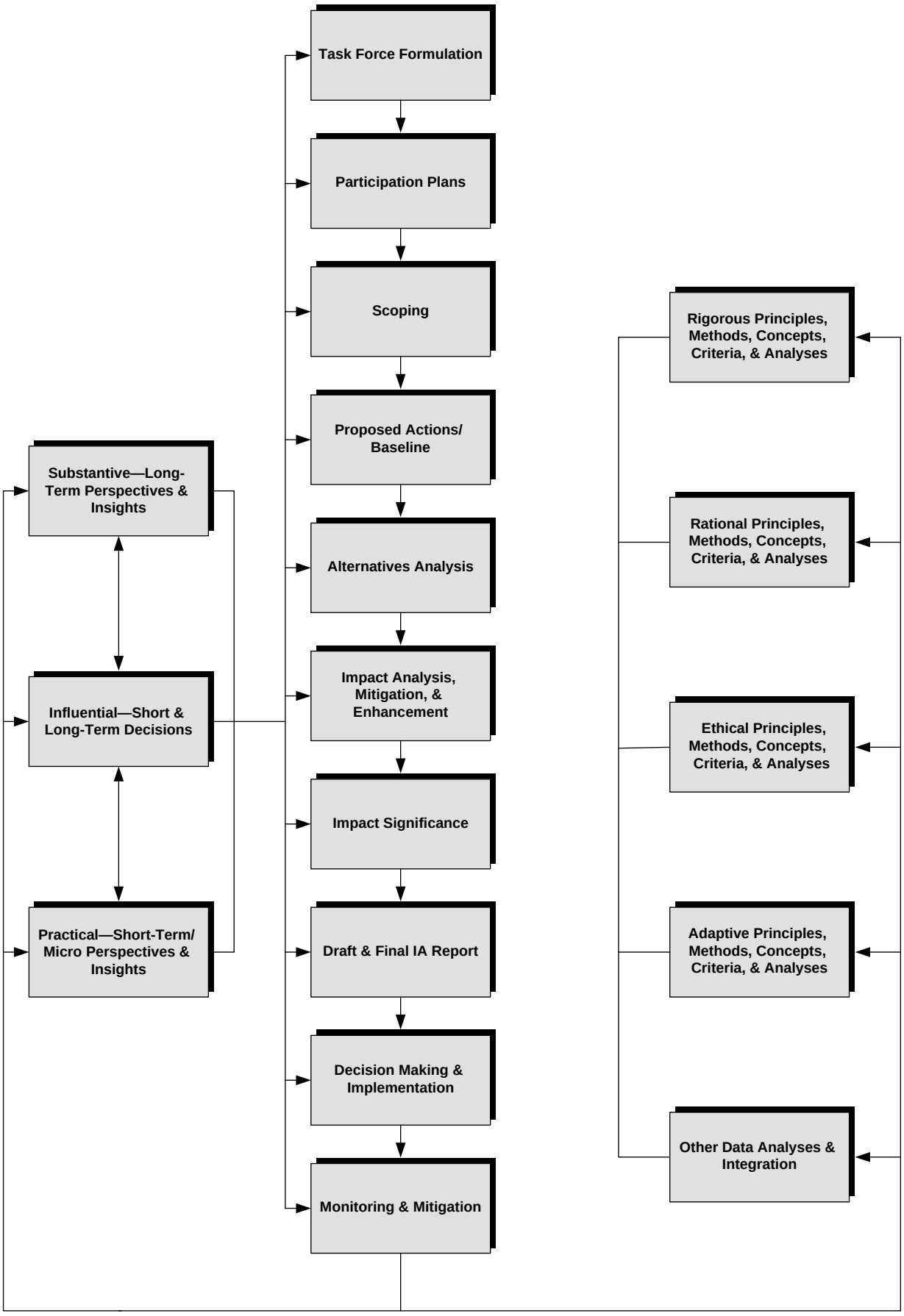

Figure 12.1 Recurrent problems—composite IA process: collaborative, democratic/influential core.

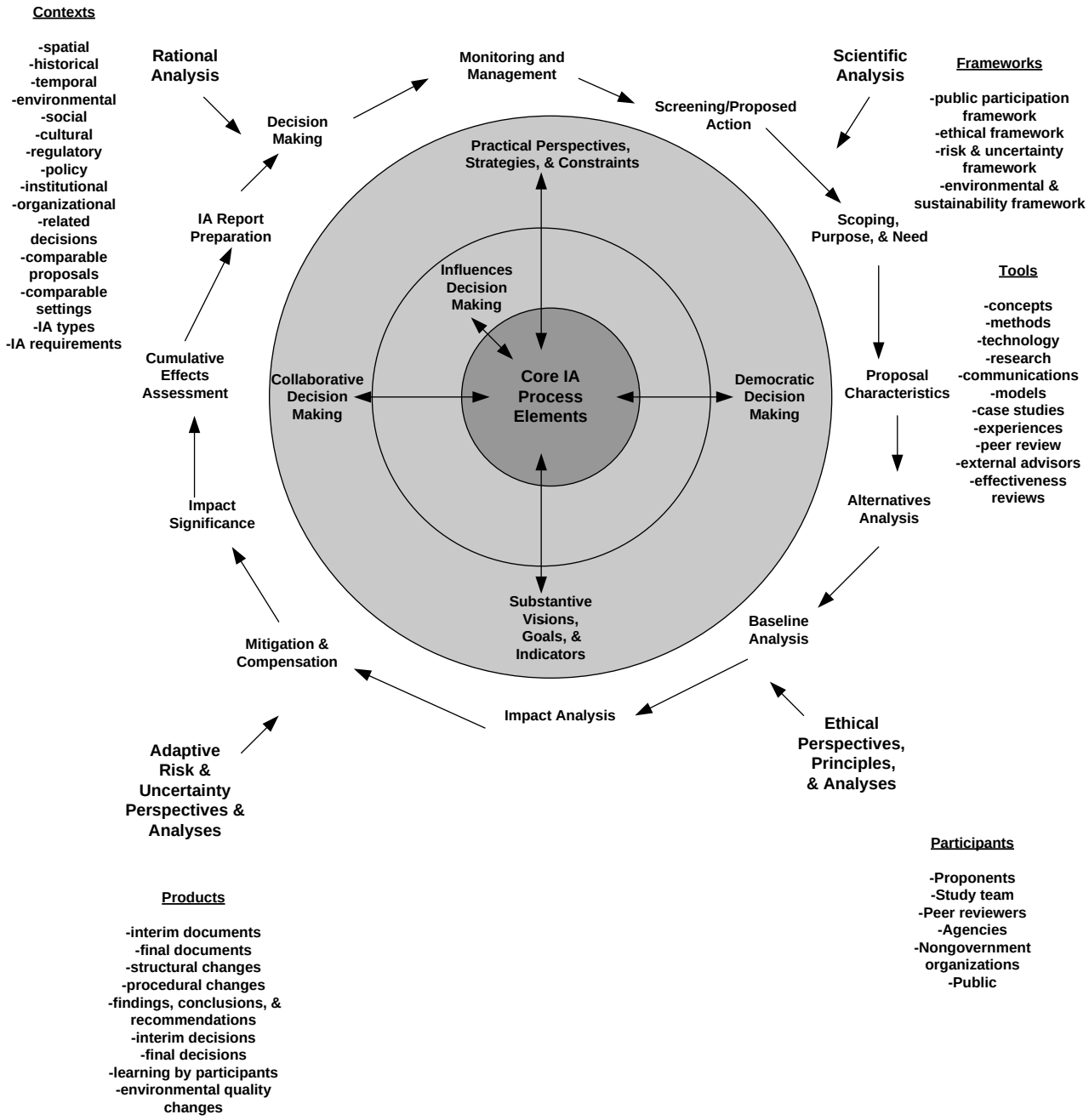

Figure 12.2 Recurrent problems an example composite IA process—IA core. Adapted from Lawrence (2005b).

minor contribution. A blending of democratic, influential, and collaborative decision making occurs for all time horizons and for all scales of analysis. Review and approval steps occur in association with each time horizon.

Suggested IA process characterizations increasingly combine elements that address two or more recurrent problems. Some examples include:

- Combining and counterbalancing collaborative/democratic/influential IA approaches with scientific/rational analysis approaches (Bina et al., 2011; Devlin, 2011; Fischer, 2005; McCluskey and João, 2011; Walker, 2003).
- Integrating collaborative/democratic/participatory approaches, ethical performance standards (e.g., inter- and intragenerational equity) and the adaptive management of risks and uncertainties under the umbrella of sustainability assessment (Bond and Morrison-Saunders, 2011; Craik, 2008; Sinclair et al., 2008; Kates, 2000; O'Brian, 2003).

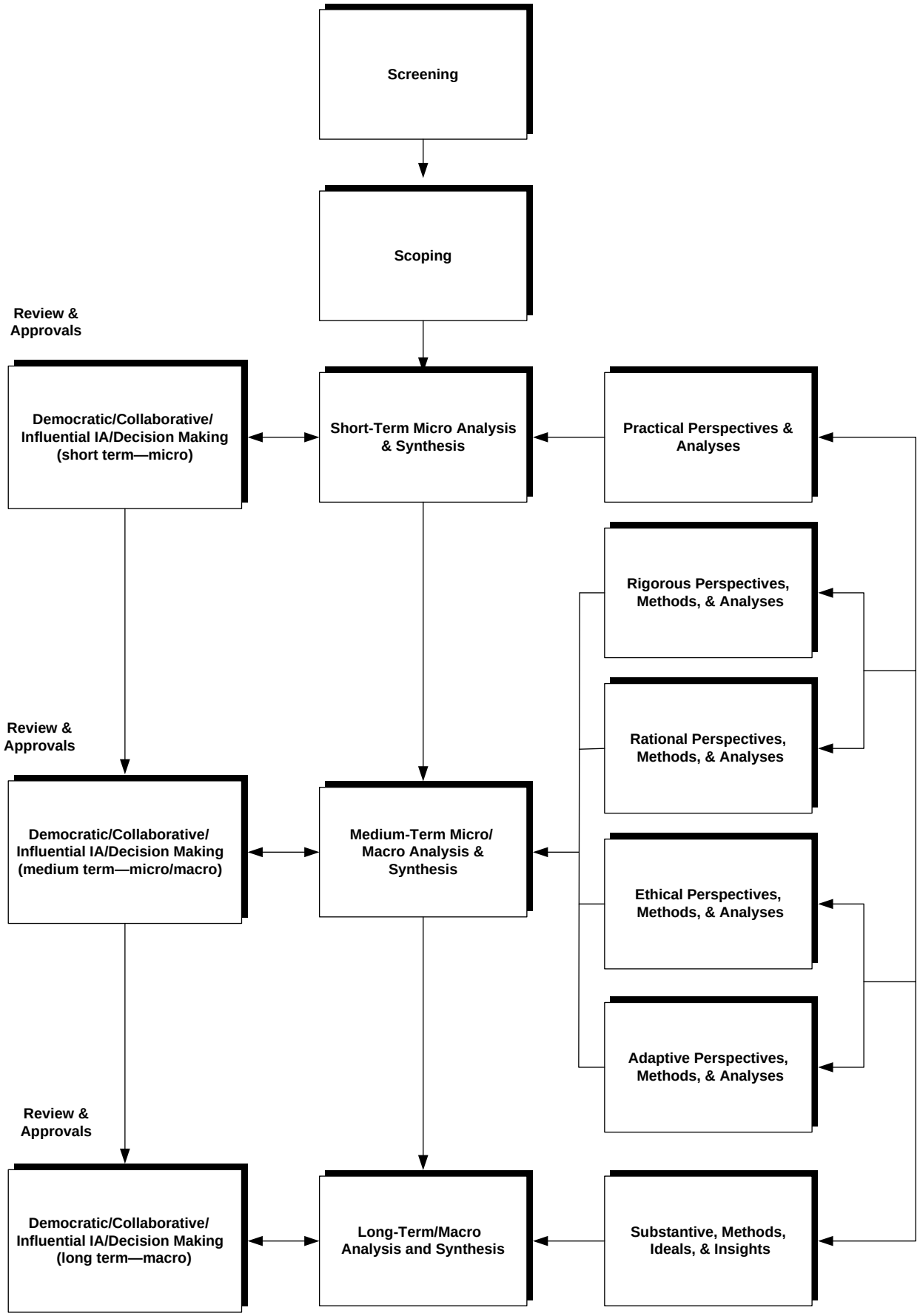

Figure 12.3 Recurrent problems—example of a composite IA process: timing and scale.

- The tempering of scientific/rational analyses with practical limits, political and economic realities, contextual variations, disputed values, and a precautionary approach to risks, uncertainties, and the unknown (Duncan, 2008; Gasparatus et al., 2007; Jasonoff, 2003; Kaiser, 2003; Levins, 2003; Morrison-Saunders and Sadler, 2010).
- The counterbalancing and constructive interaction of science and politics, science and adaptive management, and science within and outside IA (Devlin, 2011; Greig and Duinker, 2011; Tuinstra et al., 2008).
- The integration of the rational, the moral/ethical, and the practical (e.g., as in critical theory) (Elling, 2007).
- The recognition that the integration of environmental substance (e.g., sustainability) into IA is unlikely to be effective without a sound understanding of decision-making processes, the identification of critical decision windows, the integration of sustainability considerations into each decision, and a proactive effort to influence the sustainability of outcomes (i.e., combining environmental substance and decision-making influence) (Pischke and Cashmore, 2006).
- The acknowledgment that a plurality of IA frameworks, processes, and methods are needed when there are multiple contextual variations, diverse perspectives, and a variety of available approaches to knowledge acquisition and application (Gasparatus et al., 2007).
- The recognition of the need to more systematic address procedural and substantive integration, vertical integration (among IA levels), horizontal integration (among IA types), and integration with decision making, using approaches and tools such as integrated IA and CEA (Eales et al., 2005; Fischer, 2006).

12.6 IA TYPES

The appropriate environmental scope of IA is a recurrent theme in IA literature and practice (Bisset and Sadler, 2004; Eales et al., 2005; Milner et al., 2005; Orenstein et al., 2005; Ortolano, 2008). Each of Chapters 3–11 addresses how six different IA types (SA, SEA, EIA, EcIA, SIA and HIA) address the recurrent problems. The contemporary challenge addressed in Chapter 6 is horizontal integration (i.e., how widely should the environment be defined). The Chapter 6 analysis explores the case for and against integration, as well as considering partial integration options.

Table 12.2 identifies a range of potential interactions between various pairs of IA types. As is evident from Table 12.2, there are a great many potential interconnections among IA types. A failure to at least partially integrate IA types runs the risk of failing to address or adequately address these interactions. Duplication, IA requirements and processes operating at cross-purposes and a failure to address potentially significant environmental effects would appear to be the inevitable result of the absence of even partial integration. At the very least overlaps and interactions between and among IA types must be addressed if the overall IA regulatory and applied system, however informal, is to have at least some semblance of coherence, efficiency and effectiveness. At the same time, as detailed in Chapter 6, there needs to be considerable sensitivity to the potential drawbacks associated with partial or complete horizontal integration approaches.

The real choice would, therefore, seem be among various forms of weak and strong horizontal integration rather than between complete and no integration (Jiliberto, 2004). The often suggested reorientation of IA processes and procedures towards substantive purposes and outcomes suggests that the partial or complete integration of substantive IA types (e.g., EcIA, SIA, and HIA) into SEA (at the policy, plan, and programs) and project level EIA would appear to be a priority (Bond and Morrison-Saunders, 2011; Cashmore et al., 2004; Doelle and Sinclair, 2006). This is not to suggest that there will not be occasions when substantive IA types, such as HIA and SIA, cannot function effectively outside formal SEA/EIA requirements or that there will not be circumstances when it is better, given the limitations of those requirements, that separate procedures be retained. Nevertheless, it is still arguably necessary to systematically consider the interactions of the various elements of the IA system, however loosely and informally the system is defined.

Increasingly, it is being suggested that SA is either the next stage in the evolution of IA and/or represents an umbrella concept/framework encompassing and integrating all IA types (Bisset and Sadler, 2004; Gibson, 2010; Gibson and Hanna, 2009; Pope and Dalal-Clayton, 2011). Care, however, must be taken to ensure that the SA is designed and managed such that the integration of social, economic, and ecological considerations is systematically addressed from the outset (not as a bottom-line trade-off) and sustainable outcomes are clearly demonstrated (e.g., net positive sustainability benefits, avoidance of undesirable trade-offs, explicit trade-off rules) (Gibson, 2010). The illusion and pretense of sustainability remains all too common in contemporary IA requirements and practices (Bond and Morrison-Saunders, 2009).

Partial or complete horizontal integration among aspects of the environment can be facilitated by drawing upon and effectively utilizing a range of integrative forms of IA (e.g., integrative IA, CEA, territorial IA), specialized IA types (e.g., gender IA, poverty IA, disaster IA), related tools (e.g., risk assessment, LCA, multicriteria analysis, cost–benefit analysis), integrative frameworks, and related fields of theory and practice (e.g., EMS, ecological landscape planning) (Bina et al., 2011; Eales et al., 2005; Fischer, 2011; Hacking and Guthrie, 2008; Milner et al., 2005; Orenstein et al., 2010; Rotmans, 2006). It also can be furthered by addressing interactions with other forms of integration) (e.g., methodological, procedural, institutional, vertical among IA tiers,

Table 12.2 Examples of Interconnections Among IA Types

SA and SEA	SA and EIA	SA and EcIA
SA evolution of SEA SA frames SEA; SA as upper tier SA provides environmental substance for SEA (aspirations, environmental values, shared visions and limits); blending of substance and process SA principles and decision rules (e.g., contribution to sustainability test) structure SEA SEA as a tool for achieving sustainability SEA contributes to sustainability governance SA improves legitimacy of strategic decisions and broadens the range of participants SA outcome test of SEA	SA evolution of EIA SA frames SEA (sustainability strategy) Sustainability integrated into each EIA activity SA provides environmental substance for EIA (aspirations, environmental values, shared visions and limits) SA outcome test of EIA SA principles and decision rules (e.g., contribution to sustainability test) structure EIA SA improves legitimacy of project-level decisions and broadens range of participants	Ecological sustainability SA frames EcIA; EcIA a subset of SA Shared focus on environmental substance Sustainability integrated into each EcIA activity SA a means of integrating EcIA and habitats assessment into SEA and EIA SA as a means of addressing interconnections among ecological, social, economic, and health impacts (CEA) and integrating into decision making
SA and SIA	**SA and HIA**	**SEA and EIA**
Social/collaborative sustainability Sustainability learning Sustainability facilitates greater transparency and increased participation by directly affected individuals SA frames SIA Shared focus on environmental substance Sustainability integrated into each SIA activity SA as a means of integrating social concerns into SEA and EIA SA as a means of addressing interconnections among social, economic, ecological, and health effects (CEA) and integrating into decision making	Health sustainability Environmental sustainability as a prerequisite for long-lasting health Shared focus on environmental substance SA frames HIA Sustainability integrated into each HIA activity SA as means of integrating health concerns into SEA and EIA SA as a means of addressing interconnections among social, economic, ecological, and health effects (CEA) and integrating into decision making	SEA and EIA tiered SEA frames and directs EIA SEA addresses the why; EIA addresses the how, and both address the where EIA informs and refines SEA SEA and EIA connected, framed, and integrated by CEA, Integrated IA and system-level planning Individual project-level EIAs have influenced policy and institutional contexts—a form of social learning
SEA and EcIA	**SEA and SIA**	**SEA and HIA**
Integration of ecological effects into SEA EcIA of policies, plans, and programs SEA as a biodiversity instrument SEA as a means of removing barriers to integration of ecological concerns into decision making Blends process and substance CEA complementary (resource/receiving environment focus) to SEA (plan focus) Integration of habitats assessment into SEA Integration of SEA and ecological planning and management EcIA as an instrument for integrating natural sciences and landscape planning into SEA	Integration of social effects into SEA SIA of policies, plans, and programs SEA as a social justice/equity instrument (e.g., gender inequities, poverty reduction, peace, and conflict) SEA a means of removing barriers to integration of social concerns into decision making Blends process and substance SEA as a catalyst for social learning SIA an instrument for integrating social sciences into SEA and integrating SEA and social planning SEA fosters learning and institutional reform Expands SIA focus from community and project level	Integration of health effects into SEA Integration of SEA and health planning and management SEA as a means of removing barriers to integration of health concerns into decision making Blends process and substance HIA of policies, plans, and programs Role of SEA in protecting and promoting public health SEA as a health enhancement instrument HIA as an instrument for integrating health sciences into SEA

Table 12.2 (*Continued*)

EIA and EcIA	EIA and SIA	EIA and HIA
Integration of ecological effects into EIA EcIA of projects and activities Role of EcIA in integrating ecological and biodiversity concepts, principles, and methods into EIA EIA a means of removing barriers to integrating ecological concerns into project planning Blends process and substance EcIA as a means of integrating natural sciences into EIA Role of EIA in addressing ecological risks (integration of ecological risk assessment) EIA and EcIA parallel and connected or partially overlap	Integration of social effects into EIA SIA of projects and activities Integration facilitates social learning Role of SIA in integrating social principles (e.g., free, informed, and prior consent), human rights, and social performance standards into EIA A means of removing barriers to integrating social concerns into project planning A means of integrating social sciences into EIA Role of SIA enhancement in converting project risks to development opportunities (e.g., local content requirements) Blending of process and substance; SIA and EIA parallel and connected or partially overlap	Integration of health effects into EIA HIA of projects and activities Role of HIA in integrating medical science methods and health planning, assessment and management methods, and practices into EIA HIA and EIA parallel and connected or partially overlap EIA a means of removing barriers to integrating health concerns into project planning Blending of process and substance Role of EIA in protecting and promoting public health Role of EIA in addressing calculated (human health risk assessment) and perceived health risks

EcIA and SIA	EcIA and HIA	SIA and HIA
SIA provides understanding of social/cultural context; EcIA provides understanding of ecological context; overlap—mutually dependent Social consequences of ecological effects Ecological consequences of social effects Use of methods, such as landscape management, integrated IA and CEA, to trace ecological/social change, and management interactions Subsumed within SA Shared emphasis on environmental substance (purposes and outcomes) Links between biodiversity and poverty Treating ecological and socioeconomic system as a unit Social and natural science links	Ecological determinants of health Overlap ecological and human health Ecological consequences of health effects Health consequences of ecological effects Connected by CEA, integrated IA and SA Interconnections ecological and human health risks; links to human health and ecological risk assessment, and management Shared emphasis on environmental substance (purposes and outcomes) Coordinated approach to monitoring integrity of environment and health Natural and medical science links	Social determinants of health Broad definition of health (includes social) Health and safety promotion and protection an SIA principle Broad definition of social (includes health) Social consequences of health effects Health consequences from social change Shared emphasis on environmental substance (purposes and outcomes) Connected by CEA, integrated IA and SA Interconnections—calculated and perceived risks Social (e.g., gross national happiness) frames HIA Integration of SIA and HIA helps counterbalance qualitative and quantitative Social and medical science links

Sources: Alshuwaikhat (2005), Bina (2007), Bina et al. (2011), Bond (2004), Burdett (2008b), Burdge et al. (2004), Burdge, (2004), Craik (2008), Demidova and Cherp (2005), Devuyst (2000), Dixon and Thérivel (2011), Doelle and Sinclair (2006), Dora (2004), Esteves et al. (2012), Fischer (2006, 2011), Gibson (2006b, 2011), Guillette (2003), Gunn and Noble (2011), Hanna (2009a,b), Hanusch and Fischer (2011), Harris-Roxas et al. (2012), IAIA (2003), Jiliberto (2011), Kemm and Parry (2004a), Milner et al. (2005), Mishra (2009), Noble and Bronson (2006), OECD (2006), Orenstein et al. (2010), Pennock and Uma (2011), Pope and Dalal-Clayton (2011), Rajvanshi et al. (2011), Rowan and Streather (2011), Sadler (2011a), Seidler and Bawa (2003), Täbara and Pahl-Wostl (2007), Thérivel (1992, 2010), Thornton (2003), Treweek et al. (2011).

integration between the global/transboundary and the local, the integration of IA and project planning, the integration of SEA and policy, program, and plan making, the integration of IA and decision making, integrating the qualitative and the quantitative, the conceptual with the particular, the future with the present) (Pope, 2006). Critical considerations in any integrative initiative include who undertakes and how the integration is undertaken, the adjustments made because of the nature of proposed actions, and contextual adaptations (Morrison-Saunders and Thérivel, 2006).

12.7 CONTEMPORARY CHALLENGE—MATCHING PROCESS AND CONTEXT

The concept of a plurality of approaches or paradigms, where application choices are contingent on contextual characteristics, is "well-trodden ground" in planning, in the social sciences and, to some degree, in the natural sciences (Patterson and Williams, 1998; Ritzer, 1996; Rothman and Sudarshan, 1998; Schön and Rein, 1994). The general thrust of the pluralistic/contingent approach is (1) to differentiate key approach characteristics, strengths, and limitations; (2) to identify contingent factors or classes of situational characteristics; and (3) to match compatible approach and situational characteristics. A variation of the pluralistic/contingent approach is to consider both the similarities and the differences among alternative approaches or processes. The similarities or shared characteristics provide the basis for core elements. The differences provide the basis for matching approach and contextual characteristics.

In the early years of IA practice, there was a tendency to assume that IA requirements and practices were largely context-free. Context was, at best, a backdrop to be influenced but not accommodated. IA requirements could be applied in any setting as could good general IA practices. IA effectiveness could be determined through the application of generic principles and criteria. Process was expected to influence context in the sense that IA-related information and analysis would inform decision making, adverse environmental consequences would be ameliorated, and the positive purposes associated with proposed actions would be realized. Also implicit in this characterization of the relationship between process and context was the expectation of rational, apolitical decision making where IA-related choices would be largely determined by value-free scientific and rational analyses generated by a unitary IA process, and a simple, understandable, certain, manageable, and largely static environmental setting.

Not surprisingly, in retrospect, such assumptions have turned out to be overwhelmingly erroneous and dangerously naïve. The reality is that IA requirements and practices have turned out to highly context-dependent (or more appropriately interdependent), as illustrated in Figure 12.4. This reality has, over the past decade in particular, been widely acknowledged and accepted in IA literature and practice (Bina et al., 2011; Chaker et al., 2006; Fischer, 2006; Noble, 2009a,b; Partidário, 2011). The conversation, as detailed in Table 12.3, has moved on to how IA requirements and processes should more effectively influence context (both in the sense of positively affecting the environment consistent with the purposes of IA and removing the contextual impediments to decision making consistent with intended IA substantive outcomes), and should adapt to context (such that IA can effectively realize its full potential consistent with contextually based characteristics, perspectives, and priorities).

The concept of context, as applied in IA, in general terms, refers to those conditions external to IA that IA requirements and practices can and should consider, integrate, and positively influence. In the process of adapting to and influencing context, contextual elements and IA requirements and practices overlap and converge, preferably in a mutually supportive way. Care needs to be taken to avoid false dichotomies such as context-free or context-dependent. It should be possible to identify broad IA principles and aspirations (and even some general good practices) that transcend most contextual variations, while at the same time being highly conscious of and sensitive to those contextual variations that should necessarily be adapted to and integrated into IA requirements, IA process types, and individual processes. Contextual characteristics are rarely static, simple, or certain. Instead, they more frequently tend to be complex, uncertain, emergent, fluid, heterogeneous, conflicting, value full and difficult to understand much less manage. As listed in Table 12.3, the range of potentially relevant context types and characteristics is immense. It is essential, in the design and application of IA requirements and processes, to obtain a sound understanding of the contextual characteristics relevant to or potentially relevant to IA requirements, guidelines, activities, and potential decision making and environmental outcomes. It also is necessary to have a clear undertaking of the purposes and preferred outcomes of IA requirements and processes, taking contextual characteristics in account, if there is to be any hope of a sound match between process and context.

Blending process and context is far from a simple endeavor. IA requirements/processes and context tend to be highly interdependent. They generally coevolve with considerable iterative feedback. In some cases, as in unique and highly sensitive environments, context should assume a controlling role in IA process design and management. Perspectives will vary among interested and affected parties regarding what is the appropriate blend of process and context. Definitions of the appropriate match of process and context also will vary among IA levels, among IA types, among jurisdictions, across temporal and spatial scales, and as a consequence of a host of geographic, environmental, social, economic, political, and organizational factors. Juxtaposed between IA process and context are a range of middle-ground IA types (e.g., CEA, territorial IA), concepts and frameworks, which provide the opportunity to facilitate the more effective blending of process and context. Even when there appears to be a good match between IA and contextual categories, there will always be a unique mix of circumstances associated with an individual IA process that must be taken into consideration. The fluid and dynamic nature of the relationship between IA requirements/process and context is especially evident at the (especially policy) SEA level, where boundaries between action and IA are highly permeable and subject to change, and where influencing decision making (i.e., enhancing the capacity to alter context) is just or even more important than adapting to context. It is at the SEA level, in particular, where the concept of a plurality of IA processes, approaches, and

Table 12.3 IA and Context

Definitions and Distinctions	IA Characteristics Sensitive to Context	Context Characteristics Pertinent to IA
Context—the set of facts and conditions that have an impact on the chosen IA approaches (ends, means) and outcomes (effects on content, decision making, participants, organizational) in the short and long term	IA legal framework, appropriateness to context and ability to adapt to changing context	General characteristics—complex, uncertain, difficult to control, emergent, value-full, political, heterogeneous, conflicting, and partial
Immediate context (individual actions and related policies, plans, programs, and projects) vs. wider context (political, institutional, social/cultural, organizational)	IA definitions and criteria for evaluating necessarily broad because of contextual differences	Institutional and administrative capacity; available resources
Policy (legislative, regulatory) vs. societal (political, cultural) contexts	Tiering approaches vary by context	Historical, social/cultural, economic, natural environmental, political, organizational and administrative characteristics, conditions, and trends
Structured (identified steps, formalized, centralized), unstructured (fluid, issue-driven, reactive, bottom-up) and blended (elements of each) approaches to matching process and context	Purposes of IA requirements and guidelines	Geographic characteristics (e.g., urban vs. rural)
Regulated vs. unregulated contexts	Purposes of IA process; process fit for purpose	Planning system, planning level, and type of policy, plan, program, or project and IA type
Local/regional vs. international/national/subnational contexts	Problem and opportunity definitions	Formal (rules, division of responsibility, competence) and informal (attitudes, norms, traditions) organizational structures and planning, and IA culture
Context consciousness and sensitivity (awareness and sensitivity to)	IA objectives—context-specific (concrete, meaningful, practical, comprehensive, and credible)	Political/policy goals, priorities, definitions, pressures, and commitments, power structure and constraints, dominant policy styles and discourses; role of IA (existing, potential)
Universal and context-dependent	Purpose of and need/opportunity for proposed actions vary with context	Policy-making context (technical or political rationality); environmental decision making and behavior
Country type contexts (e.g., developed, in transition, developing)	Baseline and impact characterization and forecasts influenced by context (e.g., role of climate change in alternative futures)	Variations in the "structuredness" of problem, openness of decision making to other environmental values and in denial/resistance
Direct and indirect effects of contextual factors	Scoping activities highly interdependent with context	The norms and values that frame, define, and fund public decisions; nature and degree of conflict or consensus
Complex, dynamic, and emergent notions of context	Proposal characteristics; context defines nature and character of policies, plans, programs, and projects	Decision makers understanding of environmental and sustainability issues; political will and commitment to IA
Contextual determinants	Choice of sustainability and environmental indicators dependent on context	Variations in levels of certainty about knowledge base
Current and future (e.g., certain, reasonably foreseeable, hypothetical) contexts	Types, intensities, and interpretations of impact vary by context	Variations in extent and rates of change in context
CEA integrates contextual elements into IA process	Interpretations of significance highly dependent on context	Variations in environmental governance capacity
Fit between process and context	Cumulative effects vary by context	Variations in capacity for organizational and social learning
The contextual setup; important role in IA system performance	Contextually appropriate mitigation and enhancement measures	International, transboundary, national, regional, and local contexts
Diversity of interconnected, overlapping and evolving contexts; can never fully understand or manage (contextual uncertainty)	Options and option evaluation criteria appropriate to context	Diverse forms of knowledge
Influencing vs. adapting to context	Capacity of government and nongovernment sectors to undertake, participate effectively in IA, implement measures, and support public participation	Transcending issues (e.g., climate change)
		Population characteristics
		Public concerns and preferences
		Sources of unsustainability embedded in policy and institutional contexts (e.g., laws, processes, customs, perspectives, values)
		Stakeholders—interests, perspectives, issues, concerns, power, positions, and capacities; stakeholder attitudes toward environment and sustainability

(continued)

Table 12.3 (*Continued*)

Definitions and Distinctions	IA Characteristics Sensitive to Context	Context Characteristics Pertinent to IA
	Meaningful public participation; if poorly adapted public participation weak and ineffectual Uncertainty factors dependent on institutional, political, and scientific factors; assessment of contextual uncertainty Follow-up approach and impact management strategies and measures designed to match context	Proponent type (e.g., private proponents reluctant to consider options outside business interests, corporate environmental policy) Role of professions, participating sectors, and informal networks Values and methodological assumptions; prevailing planning and thinking processes Temporal (generational, decisional) and spatial (global, macroregional, country, regional, municipality, site) scales—multiscale dimensions of context
Linkages—IA and Context	Regulatory Level—Adapting to and Influencing Context	Applied Level—Adapting to and Influencing Context
Purpose of IA—to positively influence context (environment) IA context-dependent; IA adapts to IA requirements/processes and context are interdependent, coevolve with iterative feedback; should converge over time Legal IA requirements separated from context less likely to be considered legitimate Context controls requirements/process as when unique and highly sensitive environment Capacity of IA system to influence and/or adapt to context Context determines purpose of IA requirements and IA processes Cumulative IA experience as driver of contextual change; responsibility of practitioners Multiple IA processes (centrality of pluralism) to match multiple contextual variations Policy/regional planning sets development context for CEA and EIA Good practices and IA effectiveness are context-dependent Openness of IA requirements and processes to contextual influence Role of prevailing planning and thinking processes (discourses) on IA Different perspectives and perceptions of IA process—context interconnections	Identify—purposes for influencing context through IA requirements and guidelines Decide if guidelines should be a model or a point of reference subject to contextual adjustments Sometimes will need binding requirements for highly sensitive/significant environmental conditions Seek to harmonize IA requirements among levels while allowing for contextual differences Ensure guidance materials specific to planning system, planning level, and type of policy, plan, program, or project Assess gaps in legislation and practice for adapting to and influencing context Monitor changing context and IA regulatory implications Monitor influence of IA requirements on context (intended and unintended) Adapt IA requirements in response to contextual changes; seek to ensure locally appropriate Sponsor case studies and workshops to address relationship of context and effectiveness of IA requirements and guidelines Identify context elements that need to be in place for effective IA (e.g., transparent value frames, time, support) Identify and seek to ameliorate (e.g., capacity building) policy/planning weaknesses	Identify objectives for influencing context Identify IA objectives based on context Facilitate contextual influence from bottom-up Seek to understand, make explicit, and influence values and political goals, pressures and commitments that influence decision making Place IA approval process within policy/regional planning context Seek to identify and map contextual uncertainties Monitor changing context and IA process implications Assess what works, why, under what circumstances, and from whose perspective; emphasize continuous learning Identify pertinent contextual characteristics; tailor process to context Adapt each IA process activity to context; ensure holistic approach and flexible process When addressing process–context connections communicate benefits, focus on key issues and linkages, capitalize on opportunities and learn by doing Combine generic criteria and trade-off rules with case and context-specific concerns Identify informal networks and emergent strategies that pose contextual constraints; seek to influence, alter and redefine; link to related objectives and initiatives; focus on producing and communicating strategically relevant knowledge Specify who is to be involved and how context-related adaptations are to be made; aim to change mind sets and motivations of major stakeholders and decision makers Specify focus, tasks, and roles; focus on critical factors that could make a decision-making difference (decision-oriented)

General principles that transcend context but requirements and practices vary by context
Middle-ground IA forms to allow blending of general and context-specific (e.g., territorial sustainability)
Extending IA to encompass context (e.g., closer to everyday life); extending context to encompass process (e.g., bottom-up participation)
Role of EcIA in characterizing ecological context, SIA in characterizing social/cultural context, HIA in characterizing health context, and SA in establishing sustainability status; role of each form of IA (individually and collectively) to maintain and enhance
Adapting to context essential to successful IA implementation
Acknowledgment that no one way or one best way to conduct IA
Foster role of SEA in establishing development context for project-level EIA
Tailor effectiveness criteria to IA system
Assess contextual margin of discretion in IA requirements; too much (poor practice, inconsistent, IA purposes frustrated); too little (rigid, poorly adapted to context); adjust accordingly; ensure ample room for creativity and adaptability without compromising substantive objectives and outcomes
Foster methodological pluralism
Foster continuous improvement of process–context match by supporting national and international networks
Address process–context throughout process
Shift focus of IA capacity building from procedural shortcomings to contextual limitations (e.g., political system, capacities of key stakeholders, organizational and administrative system, human and financial resources, interorganizational linkages, leadership, access to information)
Seek to accommodate contextual diversity while still enhancing IA quality of practice
Matching process and context highly dependent on effective collaboration, coordination, negotiation, and persuasion; emphasize organizational and social learning and self-reflection
Draw upon good practice IA frameworks and practices but be sensitive to IA type and contextual variations
Make substantive ends (e.g., sustainability) operational within organizational practice
Develop, refine, and use frameworks that explore interconnections between process and context
Support with capacity building, including self-help networks
Favor IA process and methodological pluralism; multiple approaches and quantitative/qualitative methods to facilitate process–context match
Draw upon lessons and insights from related fields of theory and practice regarding process/context relationship (e.g., planning, environmental management); contribute to theory building
Seek shared understanding of appropriate substantive outcomes
Seek shared understanding (practitioner, researchers, stakeholders) of appropriate match—process and context
Seek complementary relationship between IA outcomes and outcomes from related policies, plans, programs, and projects
Pilot test and evaluate any proposed approaches; experiment with alternative approaches
Compare methods across a broad range of jurisdictions and system types to identify common questions and solutions
Assess added value of IA in context

Sources: Adelle and Weiland (2012), Alshuwaikhat (2005), Azcarate and Balfors (2009), Barrett and Lee (2003), Bina (2007), Bina et al. (2011), Bond (2010), Bond and Morrison-Saunders (2009), Bond and Pope (2012), Bond et al. (2012), Briffet et al. (2003), Cashmore et al. (2010), Cherp and Antypas (2003), Cherp et al. (2007), Craik (2008), Dovers (2005), Greig and Duinker (2007), Dusik and Sadler (2004), Égré and Senécal (2003), Faber et al. (2010), Fahy and Cinnéide (2007), Finnveden (2003), Fischer (2002, 2005, 2006, 2007b), Fischer and Gazzola (2006), Gasparatus et al. (2007), Gazzola (2008), Genter et al. (2008), Gertler (2009), Gibson (2006b, 2010), Hacking and Guthrie (2006, 2011), Hansen and Kørnøv (2010), Harris-Roxas et al. (2012), Hartley and Wood (2005), Hemmings and Roura (2003), Hildén et al. (2004), Hindling and Bjarnadóttar (2007), IAIA (2003), Jackson and Dixon (2006), Jay (2005, 2007), Jiliberto (2011), Kiewiet and Vos (2007), Koivurova (2008), Kolhoff et al. (2009), Kørnøv and Dalkmann (2011), Lee (2006), Lemon et al. (2004), Lyhne (2009), Marshall et al. (2005), McCluskey and João (2011), Morgan (2012), Morrison-Saunders et al. (2003), Ng and Hui (2007), Nilsson and Dalkmann (2010), Noble (2009a,b), Noble and Gunn (2009), Partidário (2007, 2011), Partidário and Coutinho (2011), Persson and Nilsson (2007), Péti (2012), Pinho et al. (2010), Pischke and Cashmore (2006), Pope and Grace (2006), Posas (2011), Putters (2005), Risse et al. (2003), Ross et al. (2006), Runhaar (2009), Runhaar and Driessen (2007), Sadler (2005a), Sadler and Jurkeviciute (2011), Schijf (2011), Sheate (2011), Sinclair and Diduck (2009), Slootweg (2005), Smith and Schin (2004), Storey and Jones (2003), Tetlow and Hanusch (2012), Treweek et al. (2011), Vanclay (2006), Weaver et al. (2008), Weiland (2010), Weston (2011), Whitelaw et al. (2009), Wirutskulshai et al. (2011), Zhu et al. (2010).

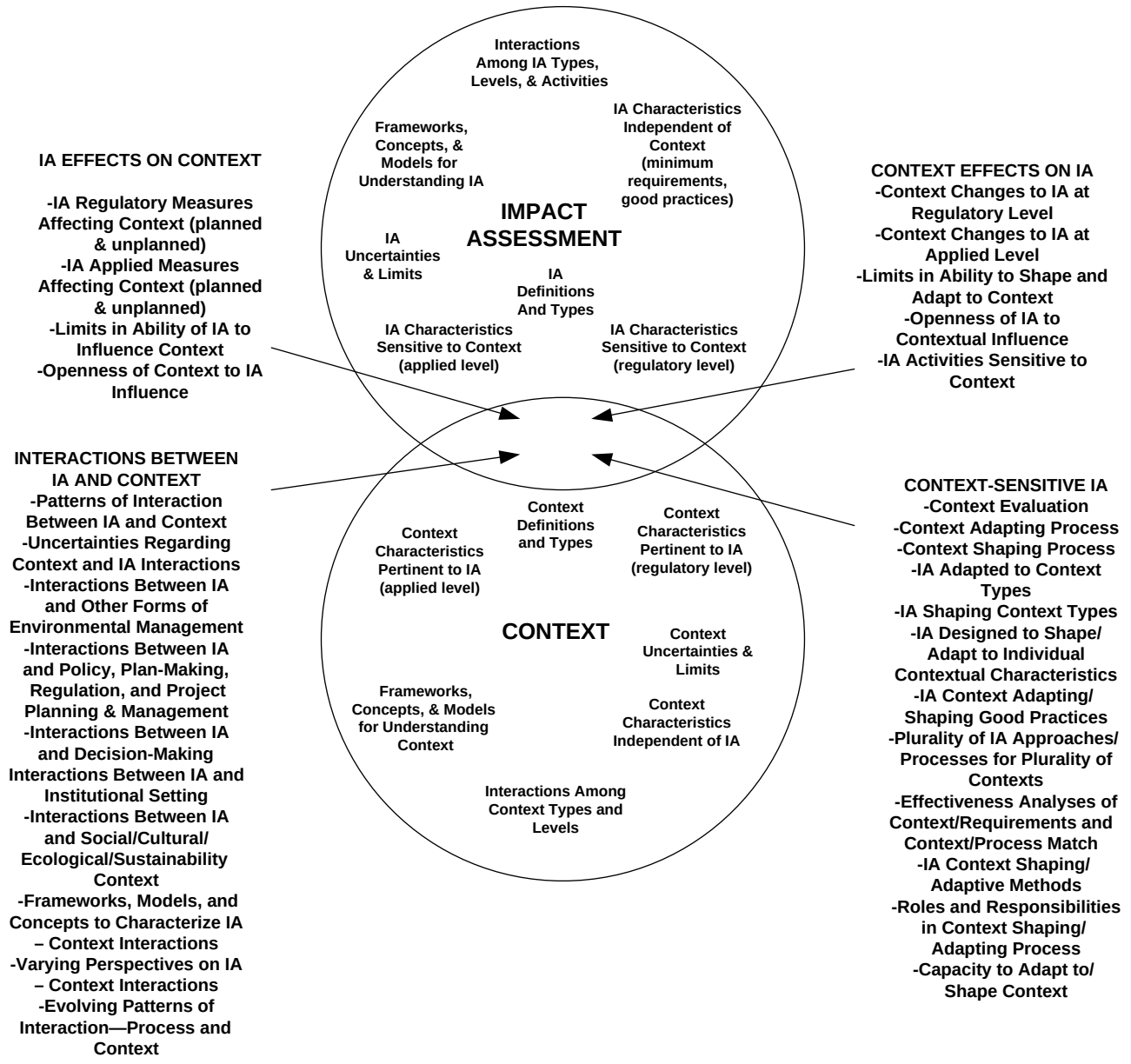

Figure 12.4 Matching process and context.

methods to match a complex array of uncertain and rapidly changing contextual conditions and constraints appears to be most appropriate.

As highlighted in Figure 12.4 and as detailed in Table 12.3, IA affects (sometimes deliberately and sometimes not) and is affected by context. The patterns of interaction between IA and contextual characteristics are many and complex. The process of matching IA and context operates at both the regulatory and applied levels. It encompasses such considerations as characterizing context, IA requirements, and processes designed to influence context, IA requirements, and processes adapted to context, a host of contextual shaping and adapting procedures and methods, an openness to a plurality of approaches and frameworks to match a plurality of contexts, an appreciation that contextual interpretations will vary among perspectives and over time, an acknowledgment of the need to ensure sufficient capacity for contextual adaptation/influence, and a realization of the need to assess the effectiveness of the ongoing fit (again from multiple perspectives) between process and context.

Table 12.3 identifies a range of potential measures, available at the regulatory and applied levels, to facilitate the dynamic and evolving fit between process and context. The appropriate mix of measures will, of course, vary from situation to situation. IA literature has broadly recognized that definitions of IA system and process effectiveness are context-dependent. This suggests that relying on "good-practice" IA guidance should be approached with great

caution. Although the need to tailor the process to the context is widely accepted, good practice guidance for undertaking such endeavors is, at best, in its infancy. Arguably, generic IA good-practice guidance and context tailoring could be seen as a contradiction in terms. Possible middle-ground opportunities worth exploring include identifying generic context-matching principles, seeking to narrow the definition of effectiveness to specific IA types, levels and setting types, sponsoring comparative studies across contextual categories to explore the potential for identifying transcending and contexts-specific good practices, sponsoring case and pilot studies for testing various approaches for blending process and context, sponsoring forums and workshops to encompass a range of perspectives on the issue of blending process and context, and devoting greater attention to such middle-ground approaches as CEA and territorial IA, which have already sought to more effectively integrate contextual considerations into IA practice.

12.8 CONTEMPORARY CHALLENGES

Chapters 2–12 each address a contemporary challenge encountered in IA practice. Examples of interconnections among IA contemporary challenges are highlighted in Figure 12.5. As illustrated in Figure 12.5, CEA represents a bridge between SEA and project-level EIA. SA subsumes SEA, CEA, and project-level EIA. Structuring challenges address the integration of environmental disciplines and efforts to match process and context. IA type and activity challenges address issues associated with formulating and applying good practices for various IA types (e.g., SEA, CEA) and for various key IA activities (e.g., significance determination, follow-up). Institutional decision-making challenges are concerned with the relationship of IA and decision making and with IA and related institutional arrangements (e.g., capacity building, multijurisdictional IA). Crosscutting issue challenges are concerned with critical issues (e.g., climate change, the siting of locally unwanted land uses) that affect all types of IA process types, IA types, and IA levels.

IA practitioners must frequently address a multiplicity of contemporary challenges. As detailed in Table 12.4, these contemporary challenges are highly interconnected. To give a hypothetical example, in the course of designing and managing an SEA for an analysis of transportation infrastructure choices:

a. The process should be designed and managed, as appropriate, in accordance with SEA good practices.
b. Any IA process is of little value if it does not effectively inform and influence decision making. This necessitates drawing upon good practice guidance for influencing decision making.
c. It should seek to both influence context (in the sense of affecting decision making and realizing desired environmental context) and adapt to context (in the sense of being appropriate for the institutional, social, economic, political, and environmental setting).
d. Careful consideration should be given to how best to address interactions among environmental components (horizontal integration), and to the analysis and management of cumulative effects (drawing upon CEA good practices).
e. Inasmuch as transportation infrastructure projects (e.g., highways) can be viewed as "locally unwanted land uses" by directly affected individual and communities, the SEA should draw upon good practice LULU siting approaches, and should effectively frame the consideration of major transportation projects at the project EIA level.
f. Transportation infrastructure choices inevitably encompass a diverse array of jurisdictions and stakeholders, some of which may lack the capacity to fully and effectively participate in the SEA process. Consideration will, therefore, need to be given to multijurisdictional IA arrangements (including IA tiering), and to the need for IA capacity building;
g. Significance determination and follow-up are two critical activities in any IA process. Approaches for undertaking these activities should be systematically and collaboratively formulated and applied, with ample thought given to good practice guidance and contextual variation; and
h. Climate change is likely to a major issue with any major transportation infrastructure SEA. Systematic and comprehensive approaches for integrating climate change concerns will need to be integrated into the SEA process.

The same or a similar array of contemporary challenges would apply with a major sectoral SEA, a major pipeline, and so on. IA literature has much to offer in addressing these types of challenges. However, care should be taken to ensure that the approaches taken to address multiple challenges are complementary and appropriate to the setting.

12.9 COMPOSITE IA PROCESSES

Composite IA processes have been a recurrent theme in IA literature in recent years. Largely gone is the view of the IA process as a simplistic, unitary, linear, standardized, and context-free procedure for complying with regulatory requirements. Suggested composite IA approaches have assumed many forms. Examples include:

- The use of *structuring frameworks and models* (e.g., to systematically identify and explore various interconnections among IA process types, IA types, IA levels, decision making, planning policy, and institutional arrangements, qualitative and quantitative tools,

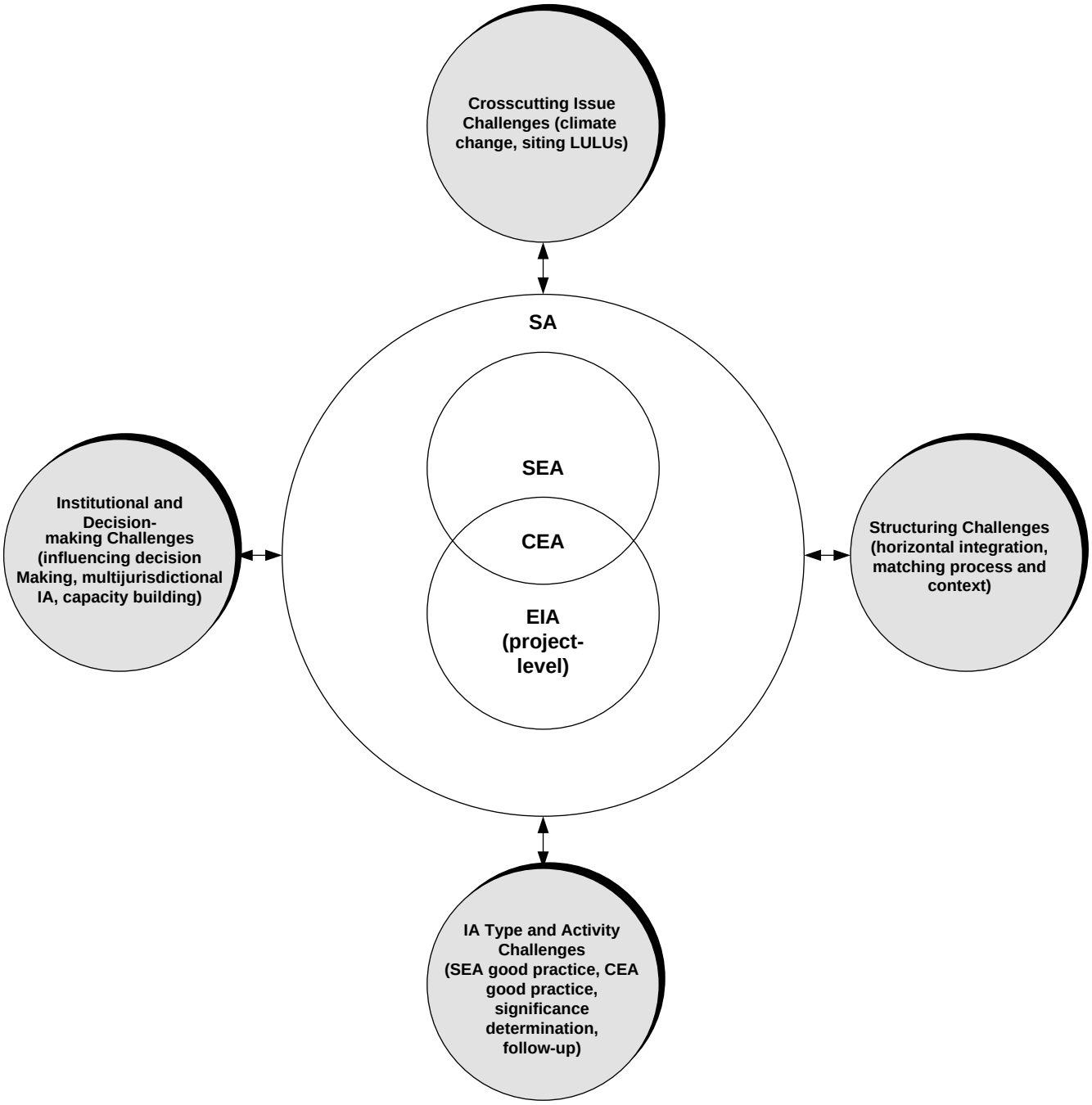

Figure 12.5 IA and contemporary challenges.

stakeholders, spatial and temporal scales, and contextual characteristics, to link and transcend the procedural, the substantive, the normative, and the systemic) (Binder et al., 2010; Fischer, 2005, 2006; Hacking and Guthrie, 2006; Jiliberto, 2004; Kessler and Abaza, 2006; Lee, 2006; Pope, 2006; Wiek and Binder, 2005).

- Approaches that *combine IA process types, IA types, and contemporary challenge approaches*, as described in Chapters 3–12 (e.g., combinations of rational/technical/scientific approaches with participative/communicative/learning oriented/adaptive approaches, a combination of collaboration, adaptive management,

Table 12.4 Examples of Interactions Among Contemporary Challenges

SEA Good Practices and Good Practices—Making IA Influential	SEA Good Practices and Good Practice Follow-up	SEA Good Practices and Siting LULUs	SEA Good Practices and Horizontal Integration	SEA Good Practices and CEA Good Practice
SEA good practices are of little value if they have no influence on decision making Marrying the two types of good practices makes it possible for the level of IA to be raised and for it to make a difference	Good practice SEA and good practice follow-up are complementary Follow-up is a vital component of SEA Effective follow-up makes it possible to progressively improve SEA good practice	Tiered and effective SEA frames the siting of LULUs Effective SEA reduces the likelihood and severity of adverse effects and enhances the potential for community benefits from LULUs SEA provides goals and collaboration momentum	SEA good practice tends to broadly define the environment The scope of effects and the treatment of trade-offs are crucial; need to carefully consider horizontal integration arguments and choices	SEA is the most appropriate level for considering cumulative effects; in practice tends to be poorly done The integration of SEA and CEA good practices has the potential to be complementary and mutually beneficial
SEA Good Practices and Multijurisdictional IA	**SEA Good Practices and Capacity Building**	**SEA Good Practices and Significance Determination**	**SEA Good Practices and Climate Change**	**SEA Good Practices and Context**
SEA is tiered (policies, plans, and programs PPP); also frames projects Many PPPs involve multiple jurisdictions; effective SEA systematically addresses the role of each jurisdiction SEA good practices are adapted to jurisdictional differences	Prevailing institutional arrangements often limit effective SEA practice IA capacity building facilitates effective SEA practice Capacity building is a component of SEA good practice	Significance determinations occur throughout the SEA process Good practice SEA encompasses significance determination; often significance determination is one of the weaker elements of prevailing SEA practice	Climate change is more effectively addressed at the SEA level Climate change IA good practices can be effectively integrated with SEA good practices Climate change should be addressed in every SEA activity	SEA and context are highly interdependent SEA goals seek to influence environmental context A plurality of SEA processes and methods can be adapted to context types An iterative relationship should exist between the SEA process and context
Good Practices—Making IA Influential and Good Practice Follow-up	**Good Practices—Making IA Influential and Siting LULUs**	**Good Practices—Making IA More Influential and Horizontal Integration**	**Good Practices—Making IA More Influential and CEA Good Practices**	**Good Practices—Making IA More Influential and Multijurisdictional IA**
Follow-up is of little value if it does not influence decision making; good practices for making IA more influential address follow-up roles Follow-up can inform and enhance good practices for making IA influential	Good practices for the siting of LULUs are only relevant if they influence decision making Effective LULU siting experiences can contribute to organizational learning Good practices for making IA more influential should encompass LULU siting	The siting of LULUs is unlikely to be effective unless the full range of social, ecological, and economic concerns are addressed The manner in which horizontal integration occurs is crucial to the realization of net benefits at every level	CEA good practices are of little value if decision-making influence is limited CEA good practices should include measures to enhance IA influence Good practices for making IA more influential could further the role of CEA in decision making	Efforts to make IA more influential should apply to all pertinent jurisdictions and should be tailored to each jurisdiction A systematic approach to multijurisdictional IA can enhance the potential for decision-making influence

(continued)

Table 12.4 (*Continued*)

Good Practices—Making IA More Influential and IA Capacity Building	Good Practices—Making IA More Influential and Significance Determination	Good Practices—Making IA More Influential and Climate Change	Good Practices—Making IA More Influential and Context	Good Practice Follow-up and Siting LULUs
IA capacity building efforts are of limited relevance if they do not address the issue of decision-making influence Effective IA capacity building can enhance the potential for greater decision-making influence Efforts to make IA more influential should include IA capacity building	Significance determination good practices are of limited relevance if they do not influence decision making Effective significance determination procedures can better inform and facilitate enhanced IA influence Measures to enhance IA influence should include who decides and how significance determinations are made	Climate change IA good practices are of limited relevance if they do not influence decision making Measures to make IA more influential should include who decides and how climate change is to be addressed Climate change IA good practices can better inform and influence IA-related decision making	Measures to make IA more influential need to be adapted to context Measures to make IA influential include how IA is to reshape context (i.e., aspirations and outcomes) Measures to match process and context should include how process and context can be more effectively blended to better inform and influence decision making	The follow-up stage is an important component of any strategy for siting LULUs Follow-up of LULU siting experiences can contribute to more effective siting approaches Good practice follow-up should include measures for addressing anticipated and unanticipated land use conflicts and conflicts among stakeholders
Good Practice Follow-up and Horizontal Integration	**Good Practice Follow-up and CEA Good Practices**	**Good Practice Follow-up and Multijurisdictional IA**	**Good Practice Follow-up and Capacity Building**	**Good Practice Follow-up and Significance Determination**
Good practice follow-up should address the full range of direct and indirect environmental effects The manner in which environmental disciplines are connected and integrated is crucial to effective follow-up Good practice follow-up can inform and guide IA horizontal integration efforts	Follow-up is a critical component of CEA good practices Follow-up can inform and guide effective CEA Good practice CEA and good practice IA follow-up can be complementary and mutually beneficial	Effective multijurisdictional IA includes a coordinated and consistent follow-up approach Good practice follow-up specifies the roles and responsibilities of each jurisdiction Good practice follow-up can inform and guide multijurisdictional IA	Good practice follow-up is likely to be of little value if there are follow-up capacity deficiencies IA capacity building can ameliorate and enhance the ability to undertake effective follow-up Good practice follow-up can inform and guide IA capacity-building initiatives	Sound procedures for determining the significance of effects are critical in follow-up Good practice follow-up should draw upon and include good practice significance determination Good practice follow-up can inform and guide significance determination methods
Good Practice Follow-up and Climate Change	**Good Practice Follow-up and Context**	**Siting LULUs and Horizontal Integration**	**Siting LULUs and CEA Good Practices**	**Siting LULUs and Multijurisdictional IA**
Follow-up is a critical stage of good practice climate change IA Good practice climate change IA can draw upon and include good practice follow-up Good practice follow-up can inform and guide climate change IA	Good practice IA follow-up and context are interdependent Good practice IA follow-up should both influence and be adapted to context Insights from follow-up can enhance efforts to more effectively blend process and context	The manner in which interconnections among environmental components are addressed can be crucial to success or failure in siting LULUs Insights from LULU siting experiences can inform choices regarding horizontal integration approaches	Any successful approach to siting LULUs must explicitly and systematically analyze and manage cumulative effects CEA good practices can be integrated into LULU siting approaches LULU siting experiences can inform CEA good practice	A tiered IA system is more conducive to the successful siting of LULUs A successful LULU approach clearly defines the roles and responsibilities of each jurisdiction LULU siting experiences can inform multijurisdictional IA good practices

Siting LULUs and Capacity Building	Siting LULUs and Significance Determination	Siting LULUs and Climate Change	Siting LULUs and Context	Horizontal Integration and CEA Good Practice
Good practice LULU siting approaches are likely to be of little value if there are follow-up capacity deficiencies IA capacity building can ameliorate and enhance the ability to successfully site LULUs LULU siting experiences can inform IA capacity building initiatives	Crucial to any LULUs siting approach are the approaches used to interpret significance Sound and appropriate significance determination approaches can facilitate the successful siting of LULUs LULU siting experiences can inform the formulation and refinement of significance determination approaches	Climate change is often a major issue among government bodies and public stakeholders Mutually beneficial solutions include how climate change requirements and objectives are to be satisfied Climate change impacts a potentially transcending factor in the determination of acceptable solutions	The siting of LULUs and context are interdependent; what works in one situation can be completely inappropriate in another A successful LULU siting approach seeks to both positively influence context and to adapt to an evolving context LULU siting experiences can inform efforts to match process and context	CEA good practice includes the systematic consideration of environmental interconnections CEA good practice can draw upon insights derived from the horizontal integration debates Horizontal integration approaches can learn from CEA experiences and good practices
Horizontal Integration and Multijurisdictional IA	Horizontal Integration and IA Capacity Building	Horizontal Integration and Significance Determination	Horizontal Integration and Climate Change	Horizontal Integration and Context
Multijurisdictional IA is more likely to be effective if complementary approaches to horizontal integration are adopted by all jurisdictions Horizontal integration good practice includes specifying the roles and responsibilities of each jurisdiction Multijurisdictional IA good practice includes systematic horizontal integration procedures	Good practice horizontal integration is dependent upon the adequate capacity to systematically analyze all environmental components and their interactions Horizontal integration good practice includes capacity building IA capacity building initiatives can inform horizontal integration efforts	Procedures for addressing significance will vary among substantive IA types Good practice significance determination include the significance of interactions among environmental components and cumulative effects Effective horizontal integration is crucial to effective significance determination	Climate change effects cut across environmental components and are highly interdependent An effective horizontal integration approach is crucial to good practice climate change IA Horizontal integration approaches and methods can inform and facilitate good practice climate change IA; the reverse is also true	The effectiveness of horizontal integration IA approaches is highly interdependent with context Effective approaches to matching process and context should draw upon and subsume systematic horizontal integration approaches Effective horizontal integration is crucial when matching process and context
CEA Good Practice and Multijurisdictional IA	CEA Good Practice and IA Capacity Building	CEA Good Practice and Significance Determination	CEA Good Practice and Climate Change	CEA Good Practice and Context
CEA invariably involves multiple jurisdictions An effective multijurisdictional IA system is critical to good practice CEA Good practice CEA specifies the roles and responsibilities of each jurisdiction CEA good practices and multi-jurisdictional good practices should draw upon one another and be complementary	CEA good practices are not likely to be effective if there are major capacity deficiencies CEA good practices should include measures to address capacity deficiencies IA capacity building should include measures to enhance the ability to undertake CEA	Significance determination is a critical component of and integral to every CEA activity Significance determinations should address significance of cumulative effects Good practice CEA should draw upon good practice significance determination	CEA good practice should include the consideration of climate change The systematic analysis of cumulative effects provides a sound foundation for the consideration of climate change effects The analysis of climate change effects includes interactions with other effects	CEA good practice is interdependent with context CEA good practice seeks to positively influence and adapt to context CEA good practice experience can facilitate efforts to match process and context Efforts to match process and context can inform CEA good practice

(continued)

Table 12.4 (*Continued*)

Multijurisdictional IA and Capacity Building	Multijurisdictional IA and Significance Determination	Multijurisdictional IA and Climate Change	Multijurisdictional IA and Context	IA Capacity Building and Significance Determination
Often there are major capacity deficiencies in the ability to undertake multijurisdictional IA Multijurisdictional IA initiatives should include a capacity building component IA capacity building initiatives should include the roles and responsibilities of each jurisdiction	Perspectives on significance will vary among jurisdictions Significance determination procedures should be integrated into any multijurisdictional IA system Collaborative approaches across jurisdictions are needed to determine significance	Climate change IA, given the global perspective, is an inherently multijurisdictional form of IA Multijurisdictional IA approaches should include procedures for addressing climate change Climate change IA should specify the roles and responsibilities of each jurisdiction	Approaches for undertaking multijurisdictional approaches and context are interdependent Multijurisdictional IA good practices seek to influence and adapt to context Collaborative approaches across jurisdictions needed to match process and context	IA capacity building may be needed to ensure sound approach for determining significance Significance determinations needed to determine capacity building priorities IA capacity building initiatives should include approaches for addressing significance
IA Capacity Building and Climate Change	**IA Capacity Building and Context**	**Significance Determination and Climate Change**	**Significance Determination and Context**	**Climate Change and Context**
Good practice climate change IA often hampered by capacity limitations IA capacity building initiatives should address ability to undertake good practice climate change IA Good practice climate change IA should include measures for facilitating ability to adapt to and minimize contribution to climate change	IA capacity building highly interdependent with context Efforts to more effectively match process and context can be hampered by capacity limitations; should seek to remedy deficiencies IA capacity building efforts should be designed to positively influence and adapt to context	Significance determination is a critical component of climate change IA Significance determinations occur in every climate change IA activity Climate change impacts can be impacts of transcending significance Significance determination approaches can facilitate the interpretation of climate change impacts	Significance and context are highly interdependent Significance determination approaches should be designed to influence and adapt to context Efforts to match process and context should encompass significance determinations Experience with significance determinations can facilitate efforts to match process and context	Climate change impacts and the effectiveness of measures to ameliorate and adapt to climate change vary with context Climate change IA approaches should be designed to influence and adapt to context Approaches for matching process and context can inform good practice climate change IA

rigor and follow-up, the integration of climate change IA with adaptive management and sustainability assessment, a combination of the political, the democratic and the technical, a combination of citizen-centered follow-up, sustainability and local knowledge, a combination of IA types such as HIA, SIA, EcIA, and gender IA with decision-support tools such as LCA, CBA, RA, and MCA) (Ahmed and Sánchez-Triana, 2008c; Binder et al., 2010; Devlin, 2011; Hacking and Guthrie, 2008; Hunsberger et al., 2005; Lane et al., 2003; Morrison-Saunders and Sadler, 2010; Wilson, 2010).

- The development and refinement of *middle-ground concepts, variations, and subsets* for bridging IA process types and IA types, for integrating IA with related methods, and for matching process and context types (e.g., the use of follow-up to link EIA and LCA, the adaptation of SEA for the private sector) (Noble, 2009b; Sheate, 2011).
- Approaches that seek to delineate the *pattern of current and potential interconnections* between IA and decision making/governance, IA and the policy, planning and project development process, and IA and institutional structures and procedures (Ahmed and Sánchez-Triana, 2008c; Cashmore et al., 2010; Ortolano, 2008).
- Efforts to link and integrate *the IA process and practice with related decision-support methods, instruments, and tools* (e.g., life-cycle assessment, environmental auditing, environmental management systems, substance flow analysis, risk assessment, environmental permitting, initial environmental review, environmental site assessment, environmental indicators, ecosystem management, product and technology assessment, economic valuation, multiattribute evaluation, modeling tools, physical analysis tools, participatory methods) (Benson, 2003; De Ridder et al., 2010; Emilsson et al., 2004; Finnveden, 2003; Noble, 2009b; Porter, 2006; Ridgway, 2005, 2010; Sheate, 2011; Thompson, 2002a; Vanclay, 2010; Van der Vorst et al., 2010).
- Efforts to bridge *IA theory and practice and IA and related theory–practice fields* (e.g., interdisciplinary, transdisciplinary, and local/indigenous knowledge, the reorientation of research to substantive outcomes, connections to related fields such as land-use planning, organizational theory, policy and project appraisal, policy integration, contentious politics, and natural and social science theory and methods) (Benson, 2003; Binder et al., 2010; Cashmore et al., 2010; Cherp et al., 2007; Doelle and Sinclair, 2006; Lima and Marques, 2005; Porter, 2006; Rossou and Makan, 2007; Tang, 2008).
- Approaches that use *sustainability assessment (SA) to frame, direct, and integrate a range of IA elements and types* (e.g., connecting sustainability, participation, learning/education, social action and IA, an SA approach that integrates rationality/rigor, equity, precaution, democratic governance, socioecological integrity, livelihood sufficiency, and contextual influence/adaptation) (Gibson, 2006a; Pope and Dalal-Clayton, 2011; Sinclair et al., 2008).

Collectively, these examples provide a range of integrative possibilities to IA practitioners and other stakeholders, although considerable room remains for refining, combining, and testing them in practice. The examples suggest a field of theory–practice characterized by fluid and permeable internal and external boundaries, a plurality of processes and contexts, and a host of choices for connecting and integrating the procedural and the substantive, the regulatory and the applied, process and context, IA types and levels, and approaches for addressing both recurrent problems and contemporary challenges.

IA process design and management, as illustrated in Figure 12.6, while beginning, albeit tentatively, from core elements and good practices, is or should be framed by sustainability principles and priorities and operate within a tiered structure of SEA/project EIA levels. It should progressively and systematically encompass IA types, approaches for addressing recurrent problems, approaches for addressing contemporary challenges, and means of influencing and adapting to context. All IA generic core elements and good practices should be tested for relevance and capacity to influence decision making, and refined and adapted to more effectively match process to context.

Figure 12.7 illustrates conceptually the need to blend the procedural with the substantive (with a greater emphasis on the substantive), the need to encompass both the regulatory and the applied, the central role of efforts to match and blend IA and context types (including adjustments at the individual process/setting level), the importance of drawing upon and contributing to IA (i.e., theory building) and related fields of practice, the need for IA process types and IA types to be designed and blended to more effectively address recurrent problems and contemporary challenges, and the critical importance of bridging, melding, and transcending individual IA process design elements.

Figure 12.8 combines the substantive (broadly defined but focused on critical needs and aspirations) with the ethical (e.g., intergenerational equity, resource equity, equity in the distribution of power). It fosters planning and decision making that is influential, rational, adaptive, practical, collaborative, and democratic. Both the substantive and the procedural operate within a sustainability framework. Sustainability assessment recognizes the need for institutional reform and for mutually supportive links to other forms of sustainability management, to sustainability goals, objectives, indicators, and decision rules, and to sustainability limits and carrying capacity. A sustainability-oriented composite IA process would selectively draw upon insights, methods, and perspectives from the IA process types, the IA types, and the approaches for addressing

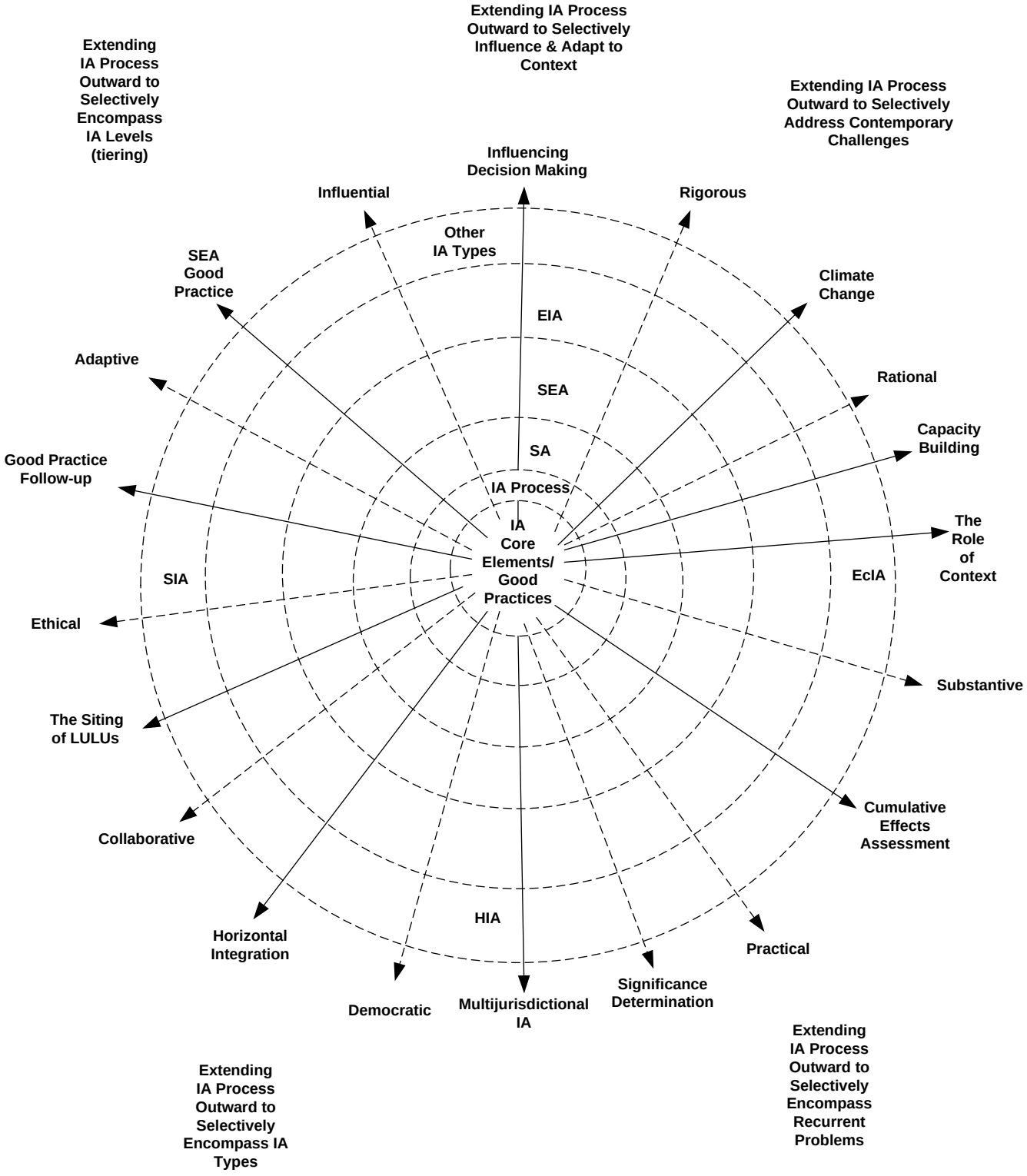

Figure 12.6 IA process design.

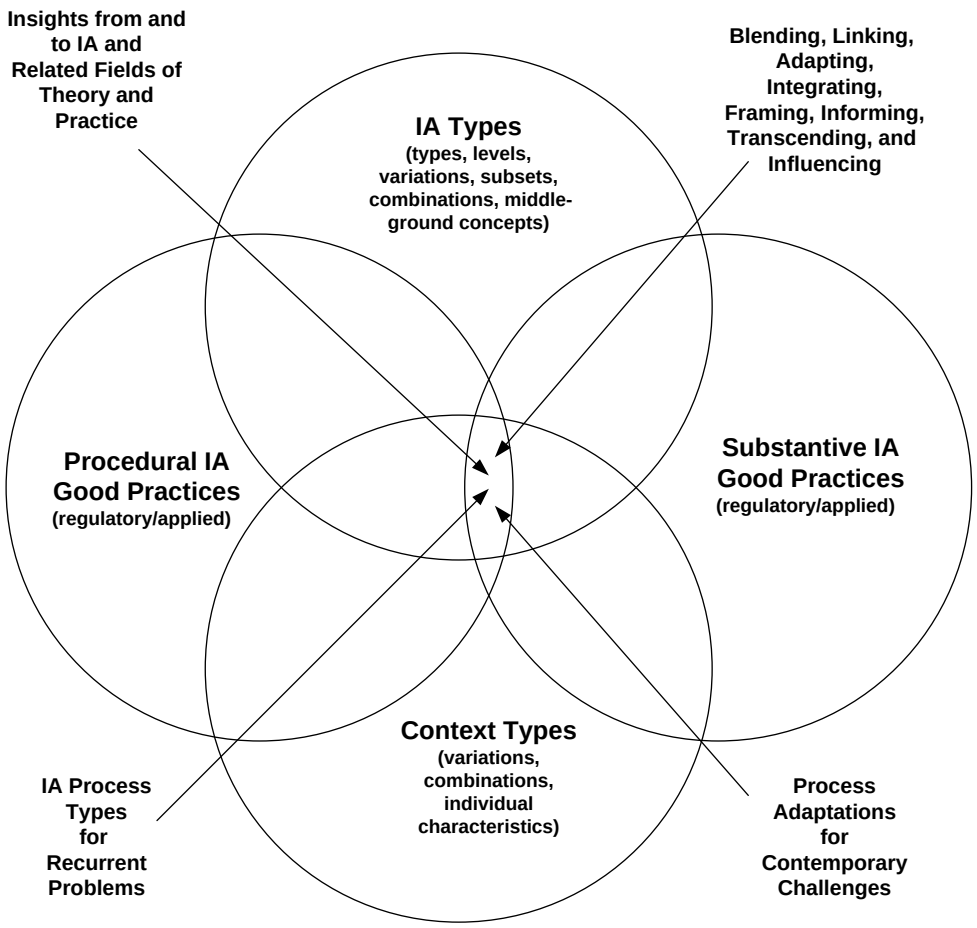

Figure 12.7 Elements of composite IA processes.

recurrent problems and contemporary challenges. The resulting modifications and refinements would reinforce the strengths and help offset the limitations (e.g., politically naïve, limited consideration of uncertainties, weak on consensus building and conflict resolution methods) of sustainability assessment. It also would facilitate a more effective fit between process and context.

An additional candidate would be the ecosystem approach. The ecosystem approach combines substantive environmental visions, principles, and objectives with collaborative decision making, practical political realities, adaptive planning, and a sound foundation of scientific and technical analysis. More consideration could be given to social, cultural, and economic concerns. A greater effort could be made to identify and resolve ethical concerns and trade-offs, to offset power inequities, and to ensure that choices are screened and compared systematically. Particular attention could be devoted to the differences between the ecosystem approach and IA. Two other existing framework possibilities are traditional knowledge (a blending of the ecological, scientific, spiritual, social, cultural, ethical, historic, collaborative, and local control) and integrated environmental assessment (starts from a combination of environment and IA types). Building from existing frameworks is helpful because the integration process has already begun. However, it is still necessary to add missing elements, supplement elements that have received insufficient attention, ameliorate shortcomings, and explore the implications of differences from IA.

12.10 LIMITS AND PRIORITIES

Enhancing IA process management, especially with reference to the recurrent shortcomings, the contemporary challenges, and the IA types, is a daunting task. Although there is considerable potential for improvement, there also are major knowledge gaps regarding the processes and process elements most and least effective in various classes of situations. The process-related knowledge base is incomplete and scattered, both within and outside IA literature. Most IAs involve multiple issues, a diversity of stakeholders, and a complex and evolving environment. IA institutional arrangements are highly interrelated with other regulatory instruments. It is difficult to separate the influence of process characteristics from other variables that affect outcomes. Definitions of process "success" and "failure" vary greatly.

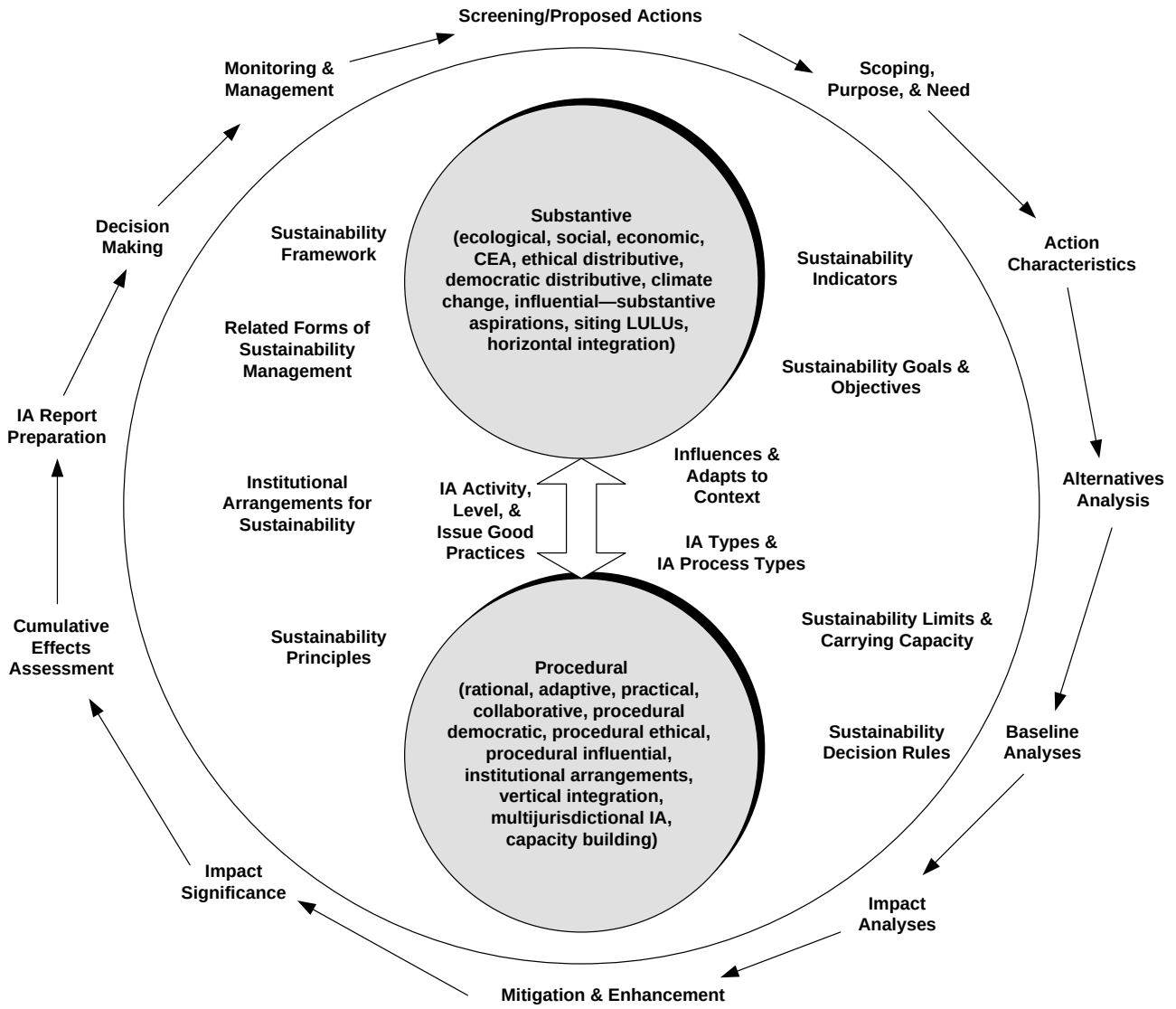

Figure 12.8 Example of a composite IA process: sustainability shaped.

There are generally multiple perceptions and perspectives on what occurred and should have occurred. IA usually occupies a peripheral position relative to project planning, policy making, and decision making. IA is, at best, a secondary mission for most proponents and regulators. IA process management problems and challenges exacerbate the organizational tendency to bypass, inhibit, or "starve for funds" agency IA functions.

Not surprisingly process participants are inclined to and frequently have a vested interest in describing and interpreting the process to their own best advantage. Memories are selective. Documentation is rarely complete. It is never easy to separate the unique characteristics of an IA process from those process attributes with potentially broader implications, either as pitfalls to be avoided or as models to be followed. Effectiveness reviews of IA process experience at both the regulatory and applied levels are limited, often anecdotal, generally are presented from only a single perspective, and tend not to be well adapted to contextual variations. Poorly designed and executed IA processes contribute to a legacy of mistrust and conflict, which, in turn, widens the gulf between IA practitioners and other stakeholders. Breaking out of this cycle requires a major effort.

These constraints are compounded by a persistent but rapidly dimensioning, belief in the myth of a "one-size-fits-all" IA process. The desire for or assumption of a "blueprint" IA process (based on a misplaced wish for certainty in an uncertain world) contributes to a common expectation that IA process management is no more than the scheduling of a standard set of IA activities, in combination with agency consultation, public consultation, study team management, and IA document preparation. The assumed simplicity of the IA process reinforces the belief that IA process management requires no specialized knowledge beyond normal project management skills and a working knowledge of regulatory requirements. Without a perception

of either the IA process knowledge base or of recurrent IA process management shortcomings and contemporary challenges, there is minimal incentive for improvement. This reluctance to alter prevailing practice dovetails with the organizational propensity to resist change. When the "recurrent problems" and "contemporary challenges" arise, the tendency is to revert to explanations that focus on unique circumstances, beyond the ability of the IA process manager to either anticipate or control. Flawed practice is repeated. When outcomes continue to disappoint, there are always new reasons for the "new" problems and challenges.

Notwithstanding these impediments, there is considerable potential for improvement if initiatives are focused, efficient, and demonstrably effective. The first priority should be demonstrating the negative consequences associated with failing to adequately address the recurrent shortcomings and contemporary challenges, and to make appropriate adjustments to suit IA level, IA type, and contextual variations. If an effective case can be made for reforming current practice, based on the experiences and perceptions of critical stakeholders, an incentive for action is created. It is next necessary to demonstrate that practical improvements are possible, are not likely to be costly, can be readily implemented, and can produce short-term benefits to the major parties.

The knowledge base for enhanced IA process management, especially concerning the recurrent problems, contemporary challenges, and IA types, is considerable, as demonstrated in the preceding chapters. Possibly this book and related references can spark a dialogue about how to facilitate better IA process management and how best to move forward. Relevant models, concepts, and frameworks can be refined and tested. Process-related regulatory requirements and guidelines can be compared and evaluated. More documentation of IA process management experiences could occur. Greater emphasis can be placed on making IA theory and practice more substantive. Further consideration could be given to the relationship between IA processes and contextual characteristics.

There is a particular need for comparative evaluations of process management experiences, IA process case studies from multiple perspectives, and more effective links to process management efforts in related fields. The net result of such efforts could be an enhanced repertoire of process management tools and skills and a better definition of good and bad process management practice. However, before significant steps forward can be taken, a serious effort must be made to prevent and ameliorate recurrent IA process management problems and to more effectively address the contemporary challenges. Hopefully this book will facilitate such efforts.

12.11 SUMMING UP

This chapter begins with three IA process stories. The three stories address the role of synthesis in different ways. In the first story, an example middle-ground approach to bridging the gap between SEA and project-level EIA is described. In the second story, a major IA capacity building initiative is described. The story illustrates that effective IA capacity building provides a mechanism for addressing multiple recurrent problems and contemporary challenges. The third story describes how IA can serve both its traditional purposes, and provide a means of achieving broader institutional, social, and environmental ends.

This chapter describes how the individual IA processes, the IA types, and the approaches for addressing the contemporary challenges, presented in Chapters 2–12, might be connected and combined at both the regulatory and applied levels. It also identifies residual limitations and priorities for future action.

The problem is when and how to apply the IA process types, the IA types, and the approaches for addressing the contemporary challenges and recurrent problems, both individually and collectively. The direction is (1) how far to go, at the regulatory level, in directing and guiding IA process management (given the range of processes and contexts); (2) how to address interconnections among IA processes that seek to manage recurrent problems; (3) how to address interconnections among IA types; (4) how to match process and contextual characteristics; (5) how to address interconnections among approaches for addressing contemporary challenges; (6) how to design and manage composite IA processes; and (7) how to cope with the limits of synthesis and to establish priorities.

IA requirements and guidelines should define minimum levels of IA process-related practice and establish process-related goals and principles. IA guidelines should narrow the gap between the minimum and the ideal. Core IA process attributes should be identified. A sense should be provided of the available IA process management choices. IA requirements and guidelines should acknowledge recurrent process-related problems and contemporary challenges, and facilitate efforts to avoid and reduce the problems and confront the challenges. The need to adapt the IA process to contextual factors and to link and integrate IA process types and IA types should be recognized. IA requirements and guidelines should draw upon process-related experiences, applied research, and effectiveness reviews.

The IA process should be designed and adapted to suit relevant recurrent problems. Consideration should be given to process subsets, variations, and middle-ground concepts. Interconnections among recurrent problems and alternative approaches for addressing those problems should be identified and explored. Due consideration should be given to whether approaches conflict or are complementary, and to measures for ameliorating conflicts. Care should be taken to ensure that approaches for addressing multiple recurrent problems are appropriate to the context.

The IA process should be designed and adapted to suit the IA types encompassed by the process. Careful consideration should be given to interconnections among IA types and to whether the procedures for integrating IA types are appropriate and suited to the context.

The IA process should be appropriate to the situation. The contextual characteristics best suited to each IA process type and IA type should be identified. Matching process and context should include considering process subsets and variations, links between core process elements and good practices, process-type strengths and limitations, the possibility of multiple problems and challenges, process overlaps and conflicts, possible synthesis forms, measures to strengthen complementary relationships, measures to offset individual and mutual weaknesses and to retain diversity, and process adjustments to match an evolving context. Elements of each IA process type and each IA type need to be integrated into any IA process.

Effective IA process design and management should systematically address structuring challenges such as horizontal integration and matching process and context. Effective use should be made of SEA good practices, CEA good practices, and good practices for determining significance and for undertaking follow-up. IA process design and management should extend to the consideration of measures for influencing decision making, for IA capacity building, and for operating effectively in a sustainability-driven multijurisdictional and multitier IA system. Wherever pertinent, IA process design and management should systematically address climate change impacts and draw upon good practice approaches to the siting of "locally unwanted land uses." The IA should take into account interconnections among contemporary challenges and should systematically combine and integrate approaches for addressing multiple contemporary challenges and recurrent problems.

IA process and management, in the course of formulating and applying composite approaches, should make effective use of structuring frameworks and models, effectively combine elements of IA process types, IA types, and contemporary challenge approaches, effectively apply middle-ground concepts, variations, and subsets, ensure effective links to decision making, to policy, planning, and project development processes, and to institutional structures and arrangements, effectively integrate and apply decision-support methods, instruments and tools, effectively bridge IA theory and practice and related theory–practice fields, and effectively draw upon core IA elements and good practices while allowing for contextual variation. When designing and managing composite IA processes consideration should be given to the role of sustainability and SA in framing, directing, and structuring the process, to procedures for linking and integrating multiple IA types, IA process types, and approaches for addressing contemporary challenges and recurrent problems, to procedures for influencing and matching process and context, and to insights from related integrative concepts and approaches (e.g., the ecosystem approach).

There are major gaps in the IA process management knowledge base. It is very difficult to separate out and interpret the effects of IA process management choices. IA in general and IA process management in particular are rarely an agency priority. Process management limitations and negative repercussions are seldom acknowledged or documented. There continues to be a widespread, but rapidly diminishing, belief in a single, infinitely adaptable, IA process. There is little recognition of the need for specialized IA process management skills and knowledge. The IA process knowledge base is poorly understood. Recurrent IA process management shortcomings and contemporary challenges, although widely acknowledged in IA literature, are recognized to a much lesser degree in IA practice. Notwithstanding these challenges, there remains considerable potential for improvement. The first priority should be demonstrating the negative consequences of failing to adequately address recurrent shortcomings, IA type variations, and contemporary challenges. The IA process knowledge base should then be supplemented with applied examples, methodological refinements, effectiveness assessments, information and perspective exchanges, and better links to related fields.

The types of problems and challenges addressed in Chapters 3–12 can often be avoided, ameliorated, and effectively addressed. A host of procedures and concepts conducive to enhanced IA process management are described. Definitive prescriptions cannot be provided because of the complexity of the field and situation-specific circumstances. But a sufficient knowledge base has been established to suggest numerous improvement possibilities. Enhancing IA process management necessarily begins with an open mind, a willingness to consider the possibility of recurrent, avoidable problems, a recognition of the need to systematically address an array of contemporary challenges, an acknowledgment of differences among IA types and the care that must be taken when integrating IA types, and a commitment to explore how best to prevent, ameliorate, and confront the problems and challenges.